

Surface-Water Station Records
for Kauai

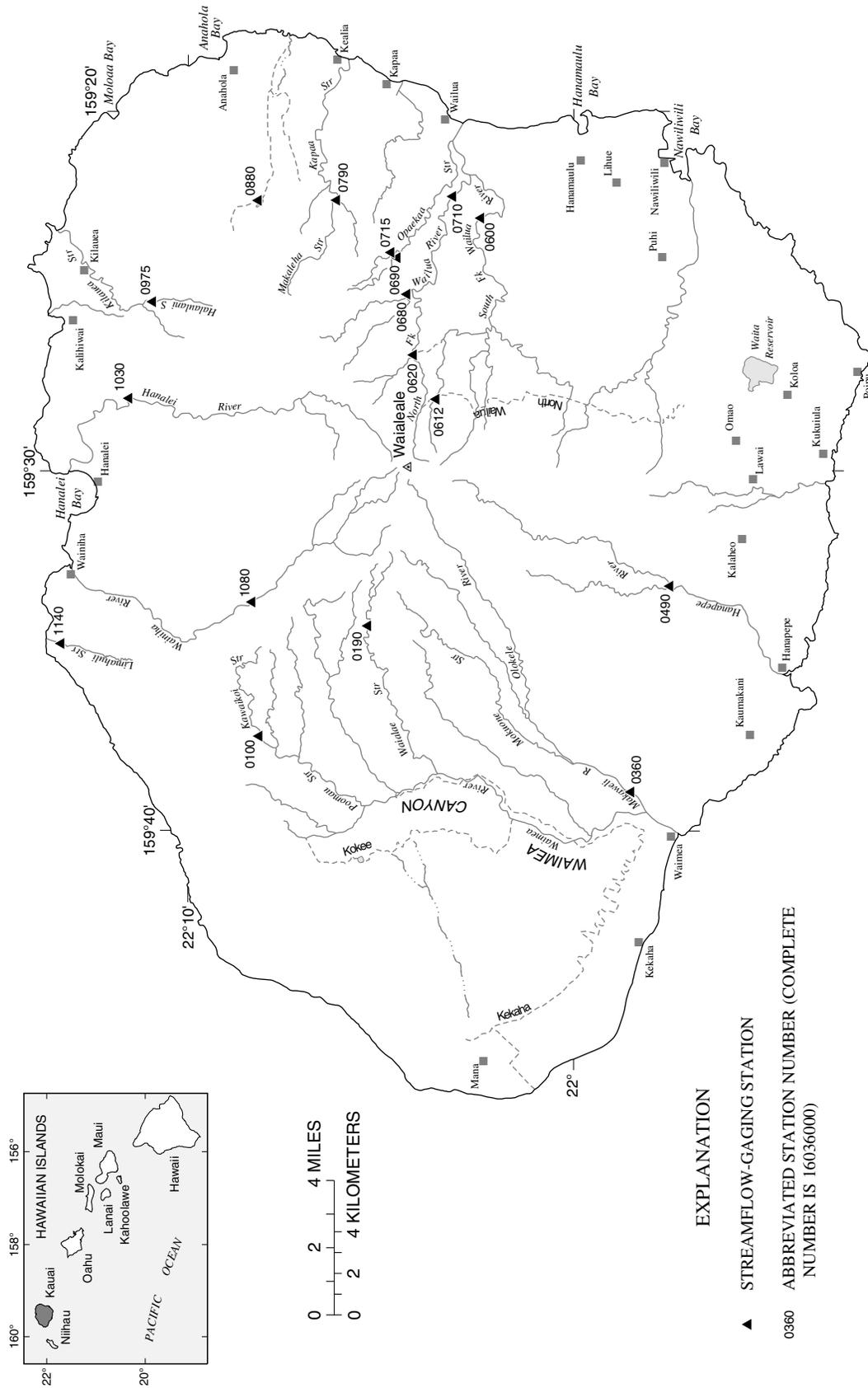


Figure 5. Locations of gaging, water-quality, and partial-record stations on Kauai.

HAWAII, ISLAND OF KAUAI
16010000 KAWAIKOI STREAM NEAR WAIMEA

LOCATION.--Lat 22°08'09 " , long 159°37'22 " , Hydrologic Unit 20070000, on left bank 0.2 mi upstream from Kokee-Mohihi Road crossing, 2.5 mi east of Kokee Lodge, and 12.5 mi north of Waimea.

DRAINAGE AREA.--3.95 mi².

PERIOD OF RECORD.--April 1909 to October 1912, December 1912 to March 1913, May 1913 to June 1915, August 1915 to May 1916, July to December 1916, July 1919 to current year. Monthly discharge only for some periods, published in WSP 1319.

REVISED RECORDS.--WSP 555: 1920-21. WSP 1185: 1914-17(M), 1920-38(M), 1940-43(M), 1947(M). WSP 1719: 1912, 1921-25, 1927-32, 1936. WSP 2137: Drainage area.

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 3,420 ft above mean sea level, by barometer. Prior to May 26, 1910, nonrecording gage at site 300 ft downstream at different datum.

REMARKS.--Records computed by Roy Taogoshi. Records good. No diversion upstream.

AVERAGE DISCHARGE.--82 years (water years 1912, 1914, 1920-99), 34.3 ft³/s (24,870 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,300 ft³/s, January 13, 1967, gage height, 15.33 ft, from rating curve extended above 470 ft³/s on basis of slope-area measurements at gage heights 12.12 ft and 13.43 ft; minimum, 1.14 ft³/s, September 21, 22, 1953.

EXTREMES FOR CURRENT YEAR.--Peak discharge greater than base discharge of 2,100 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 22	1115	*2,830	*8.69	No other peak greater than base discharge.			

Minimum discharge, 3.1 ft³/s, November 8, 9, 11, June 4-6.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

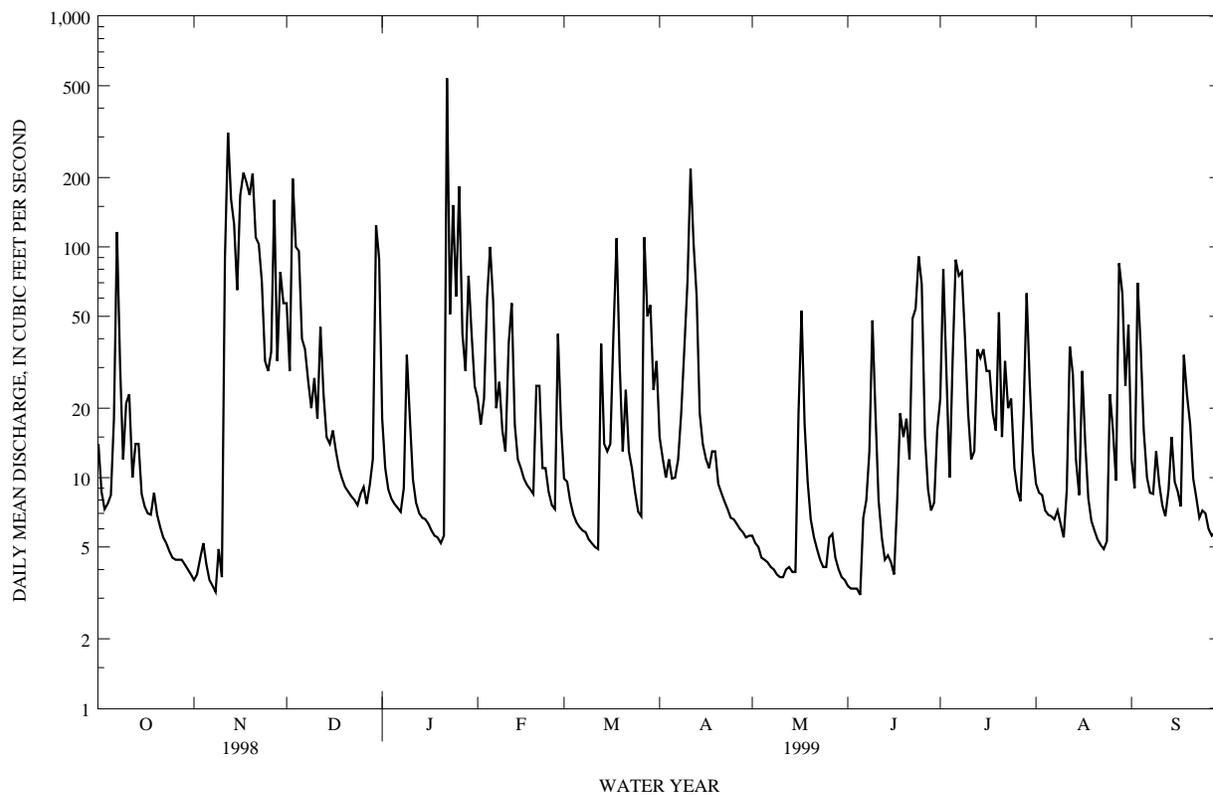
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14	3.6	57	18	22	9.9	15	5.6	3.4	22	9.4	12
2	8.7	3.8	29	11	17	9.6	12	5.2	3.3	80	8.6	9.0
3	7.3	4.5	198	8.9	22	7.9	10	5.0	3.3	27	8.4	70
4	7.7	5.2	100	8.1	60	6.9	12	4.5	3.3	10	7.2	37
5	8.4	4.2	96	7.7	100	6.4	9.9	4.4	3.1	33	6.9	16
6	18	3.6	40	7.4	58	6.1	10	4.3	6.7	88	6.8	10
7	116	3.4	36	7.1	20	5.9	12	4.1	8.0	75	6.6	8.6
8	31	3.2	26	9.0	26	5.8	19	4.0	13	78	7.2	8.5
9	12	4.9	20	34	16	5.4	37	3.8	48	41	6.3	13
10	21	3.7	27	18	13	5.2	71	3.7	19	19	5.5	9.4
11	23	89	18	9.8	38	5.0	218	3.7	8.0	12	8.8	7.6
12	10	313	45	7.8	57	4.9	103	4.0	5.5	13	37	6.8
13	14	161	23	7.0	17	38	61	4.1	4.4	36	28	8.9
14	14	125	15	6.7	12	14	19	3.9	4.6	33	12	15
15	8.5	65	14	6.6	11	13	14	3.9	4.3	36	8.4	9.6
16	7.5	167	16	6.3	9.9	14	12	19	3.8	29	29	8.7
17	7.0	210	13	5.9	9.3	41	11	53	7.7	29	14	7.5
18	6.9	190	11	5.6	8.9	109	13	17	19	19	8.1	34
19	8.6	168	9.9	5.5	8.5	31	13	9.6	15	16	6.5	23
20	6.9	208	9.1	5.2	25	13	9.4	6.6	18	52	5.9	17
21	6.1	110	8.7	5.6	25	24	8.6	5.5	12	15	5.4	9.9
22	5.5	103	8.3	538	11	13	7.9	4.9	49	32	5.1	8.2
23	5.2	71	8.0	51	11	11	7.3	4.4	54	20	4.9	6.7
24	4.8	32	7.6	152	8.7	8.7	6.7	4.1	91	22	5.3	7.2
25	4.5	29	8.5	61	7.6	7.1	6.6	4.1	69	11	23	7.0
26	4.4	35	9.1	183	7.3	6.8	6.3	5.5	15	8.8	16	6.0
27	4.4	160	7.7	42	42	110	6.0	5.7	8.9	7.9	9.7	5.6
28	4.4	32	9.3	29	17	50	5.8	4.5	7.2	19	85	5.8
29	4.2	78	12	75	---	56	5.5	4.0	7.8	63	63	5.3
30	4.0	57	124	42	---	24	5.6	3.7	16	26	25	4.8
31	3.8	---	89	25	---	32	---	3.6	---	13	46	---
TOTAL	401.8	2443.1	1095.2	1399.2	680.2	694.6	747.6	219.4	531.3	985.7	519.0	398.1
MEAN	13.0	81.4	35.3	45.1	24.3	22.4	24.9	7.08	17.7	31.8	16.7	13.3
MAX	116	313	198	538	100	110	218	53	91	88	85	70
MIN	3.8	3.2	7.6	5.2	7.3	4.9	5.5	3.6	3.1	7.9	4.9	4.8
AC-FT	797	4850	2170	2780	1350	1380	1480	435	1050	1960	1030	790

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1911 - 1999, BY WATER YEAR (WY)

MEAN	21.6	44.6	53.1	53.7	41.5	49.1	45.4	27.4	17.1	23.6	21.6	14.6
MAX	60.3	170	176	343	165	152	115	86.2	68.7	94.7	195	58.1
(WY)	1917	1929	1968	1921	1956	1951	1980	1927	1978	1989	1950	1992
MIN	3.34	4.16	11.9	3.23	4.26	6.15	5.74	3.38	3.58	5.18	2.54	1.86
(WY)	1985	1964	1923	1945	1945	1926	1992	1966	1951	1922	1984	1953

HAWAII, ISLAND OF KAUAI
1601000 KAWAIKOI STREAM NEAR WAIMEA--Continued

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR		FOR 1999 WATER YEAR		WATER YEARS 1911 - 1999	
ANNUAL TOTAL	13729.8		10115.2		34.3	
ANNUAL MEAN	37.6		27.7		60.7	
HIGHEST ANNUAL MEAN					15.3	
LOWEST ANNUAL MEAN					1982	
HIGHEST DAILY MEAN	464	Apr 9	538	Jan 22	2620	Jan 15 1921
LOWEST DAILY MEAN	3.2	Nov 8	3.1	Jun 5	1.1	Sep 21 1953
ANNUAL SEVEN-DAY MINIMUM	4.0	Nov 2	3.4	May 30	1.2	Sep 17 1953
ANNUAL RUNOFF (AC-FT)	27230		20060		24870	
10 PERCENT EXCEEDS	109		70		74	
50 PERCENT EXCEEDS	15		10		13	
90 PERCENT EXCEEDS	5.6		4.4		4.4	



HAWAII, ISLAND OF KAUAI

16019000 WAIALAE STREAM AT ALTITUDE 3,820 FT, NEAR WAIMEA

LOCATION.--Lat 22°05'20" ; long 159°34'18" ; Hydrologic Unit 20070000, on left bank 5.0 mi northeast of mouth, 6.4 mi southeast of Kokee Lodge, and 11 mi northeast of Waimea.

DRAINAGE AREA.--1.79 mi².

PERIOD OF RECORD.--January 1920 to July 1932, June 1952 to current year. Prior to July 1954, published as Waialae River at altitude 3,700 ft near Waimea.

REVISED RECORDS.--WSP 1937: 1921, 1922-32(M), 1953(M), 1954. WSP 2137: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 3,820 ft above mean sea level (from topographic map).

REMARKS.--Records computed by Roy Taogoshi. Records good. No diversion upstream.

AVERAGE DISCHARGE.--58 years (water years 1921-31, 1953-99), 21.4 ft³/s (15,490 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,530 ft³/s, January 16, 1921, gage height, 8.44 ft, from rating curve extended above 1,100 ft³/s on basis of slope-area measurement at gage height 4.60 ft; minimum, 0.99 ft³/s, May 17, 18, May 30 to June 2, 1966.

EXTREMES FOR CURRENT YEAR.--Peak discharge greater than base discharge of 1,300 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 22	0500	*1,980	*5.56	Feb. 20	1730	1,330	4.58

Minimum discharge, 2.5 ft³/s, November 11.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.1	2.7	49	10	126	7.4	16	3.5	3.0	7.8	e7.0	8.6
2	3.9	2.7	21	6.7	25	6.4	11	3.5	3.0	38	e6.0	6.0
3	26	13	185	5.2	18	5.3	11	3.3	3.0	13	e4.9	12
4	6.0	5.6	276	4.7	26	4.7	11	3.3	3.0	5.7	4.1	14
5	8.5	3.4	198	4.6	44	4.4	9.1	3.2	3.2	19	5.9	8.2
6	10	2.9	68	4.7	37	4.9	47	3.2	5.1	67	6.0	5.7
7	69	2.8	57	4.3	14	5.1	13	3.2	8.1	56	4.6	4.6
8	11	2.7	35	11	14	4.3	80	3.2	9.3	69	4.4	4.4
9	10	2.7	17	16	10	3.9	54	3.2	10	32	3.9	4.6
10	15	2.7	17	8.8	8.0	3.8	71	3.2	4.6	19	3.5	4.9
11	8.6	2.9	12	5.8	7.4	3.9	128	3.2	3.3	16	3.5	4.4
12	5.4	51	18	4.7	16	3.8	86	5.1	3.2	11	19	3.7
13	26	31	14	4.2	8.2	37	47	4.1	3.0	13	21	4.4
14	13	29	11	4.0	6.0	11	15	3.3	2.8	11	9.2	5.7
15	7.4	18	8.6	4.6	5.1	14	12	3.5	2.7	20	5.4	6.3
16	14	37	7.9	4.5	4.6	9.5	8.6	59	2.8	23	33	6.3
17	12	43	6.7	4.0	4.2	19	7.5	36	3.2	29	16	5.1
18	6.3	32	5.9	3.8	4.0	44	14	33	7.5	30	6.7	17
19	6.3	50	5.3	3.5	3.8	12	10	10	8.6	13	4.9	22
20	4.4	61	4.9	3.3	268	7.2	8.6	5.4	11	67	4.1	25
21	3.5	33	4.6	3.0	65	8.2	9.5	4.4	12	e12	3.9	10
22	3.3	29	4.4	366	55	7.1	7.0	3.7	21	e20	3.5	8.2
23	3.0	23	4.5	84	23	5.1	5.4	3.3	38	e17	3.5	5.7
24	2.9	9.8	4.4	193	9.4	4.2	4.6	3.2	57	e18	3.8	7.4
25	2.8	7.4	18	70	6.7	3.7	4.4	3.3	31	e8.0	25	8.2
26	2.8	6.7	9.2	133	5.6	11	4.1	3.3	8.3	e6.6	8.6	9.5
27	2.8	133	5.5	33	12	172	3.9	3.3	5.1	e5.0	5.4	6.0
28	2.8	20	4.6	36	13	93	3.9	3.2	4.1	e17	21	4.6
29	2.8	56	4.2	28	---	56	3.9	3.2	4.9	e45	14	3.9
30	2.8	25	69	24	---	19	3.7	3.0	7.0	e20	11	3.7
31	2.8	---	48	67	---	45	---	3.0	---	e9.0	30	---
TOTAL	299.2	739.0	1193.7	1155.4	839.0	635.9	712.2	232.3	288.8	737.1	302.8	240.1
MEAN	9.65	24.6	38.5	37.3	30.0	20.5	23.7	7.49	9.63	23.8	9.77	8.00
MAX	69	133	276	366	268	172	128	59	57	69	33	25
MIN	2.8	2.7	4.2	3.0	3.8	3.7	3.7	3.0	2.7	5.0	3.5	3.7
AC-FT	593	1470	2370	2290	1660	1260	1410	461	573	1460	601	476

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1920 - 1999, BY WATER YEAR (WY)

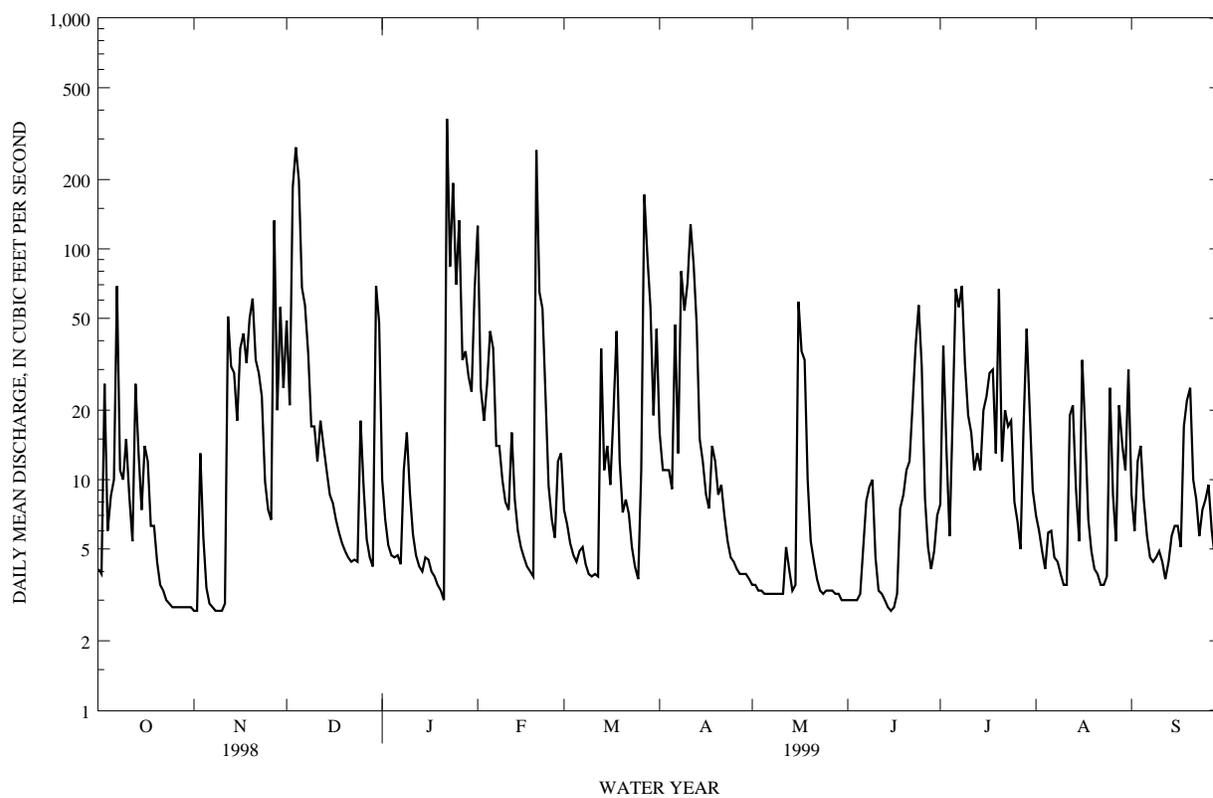
MEAN	15.7	32.7	33.8	33.3	27.0	28.0	24.2	13.2	10.1	15.4	12.4	11.0
MAX	52.1	99.2	106	166	155	106	92.4	44.1	39.4	58.0	44.9	56.0
(WY)	1995	1968	1968	1921	1956	1982	1974	1927	1978	1989	1959	1922
MIN	2.49	5.58	4.16	4.48	2.44	2.15	1.87	1.81	1.89	2.56	2.86	1.67
(WY)	1927	1927	1923	1966	1983	1926	1966	1966	1975	1984	1952	1975

e Estimated

HAWAII, ISLAND OF KAUAI

16019000 WAIALAE STREAM AT ALTITUDE 3,820 FT, NEAR WAIMEA--Continued

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR		FOR 1999 WATER YEAR		WATER YEARS 1920 - 1999	
ANNUAL TOTAL	5847.3		7375.5		21.4	
ANNUAL MEAN	16.0		20.2		40.9	
HIGHEST ANNUAL MEAN					8.94	
LOWEST ANNUAL MEAN					1926	
HIGHEST DAILY MEAN	276	Dec 4	366	Jan 22	1440	Dec 1 1957
LOWEST DAILY MEAN	2.1	Mar 17	2.7	Nov 1	.99	May 17 1966
ANNUAL SEVEN-DAY MINIMUM	2.1	Mar 16	2.8	Oct 27	1.1	May 26 1966
ANNUAL RUNOFF (AC-FT)	11600		14630		15490	
10 PERCENT EXCEEDS	38		49		45	
50 PERCENT EXCEEDS	6.1		7.5		6.6	
90 PERCENT EXCEEDS	2.7		3.2		2.6	



HAWAII, ISLAND OF KAUAI
16036000 MAKAWELI RIVER NEAR WAIMEA

LOCATION.--Lat 21°58'31 " , long 159°38'55 " , Hydrologic Unit 20070000, on left bank 0.7 mi upstream from confluence to Waimea River, and 1.9 mi northeast of Waimea.

DRAINAGE AREA.--26.0 mi².

PERIOD OF RECORD.--July 1943 to current year. Records for October 1911 to June 1917 at site 0.2 mi downstream not equivalent owing to intervening diversion.

REVISED RECORDS.--WSP 2137: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 18.2 ft above mean sea level (by stadia survey). Prior to June 16, 1959, at datum 1.00 ft higher.

REMARKS.--Records computed by Roy Taogoshi. Records good. Olokele ditch diverts all low flow from the headwaters of the Olokele River 9 mi upstream for irrigation in vicinity of Makaweli. A 5 ft³/s capacity ditch diverts water 0.1 mi upstream of station for irrigation of taro in the vicinity of the station.

AVERAGE DISCHARGE.--56 years (water years 1944-99), 85.9 ft³/s (62,240 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 26,000 ft³/s, January 31, 1975, gage height, 15.51 ft, from rating curve extended above 3,200 ft³/s on basis of slope-area measurement at gage height 10.65 ft; minimum, 3.2 ft³/s, July 19, 1951.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,700 ft³/s: and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 22	0600	*2,590	*7.34				

Minimum discharge, 10 ft³/s, December 29.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

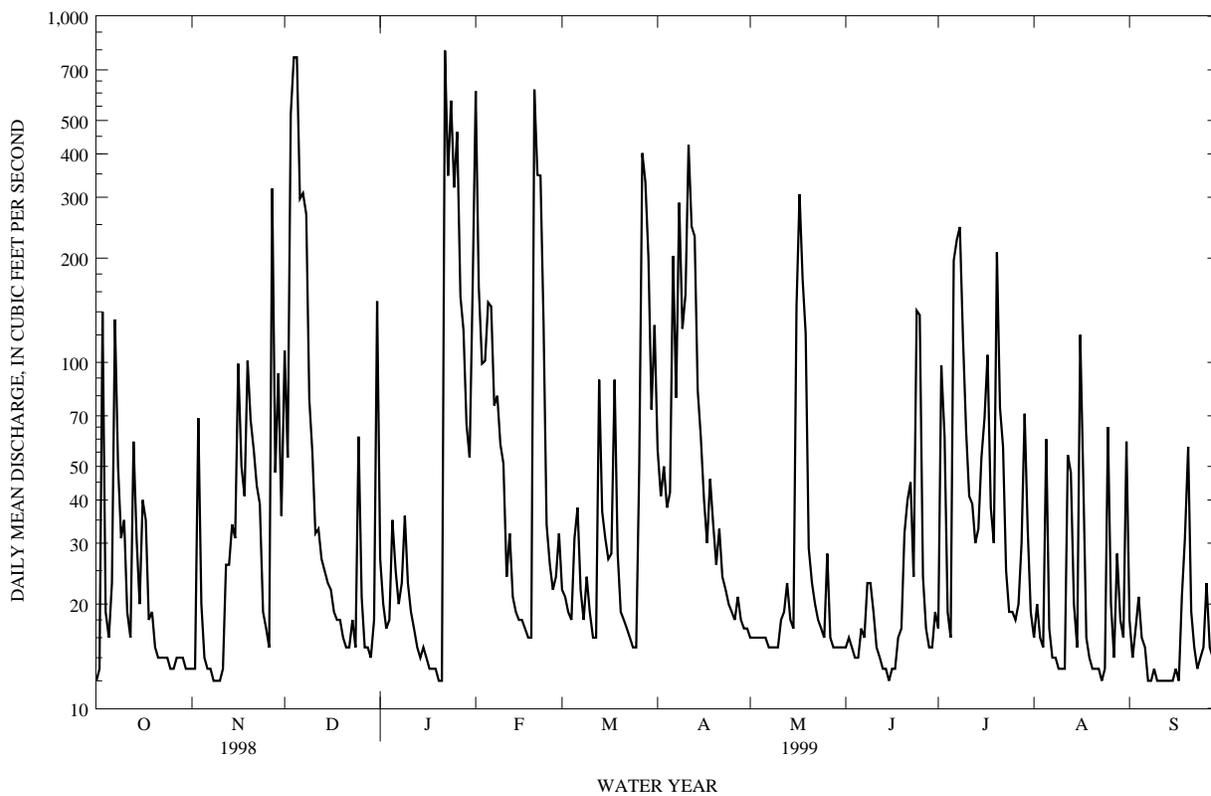
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	13	108	27	608	22	56	16	15	17	16	18
2	13	13	53	20	165	21	41	16	16	98	20	14
3	140	69	521	17	99	19	50	16	15	61	16	17
4	19	20	761	18	101	18	38	16	14	19	15	21
5	16	14	761	35	149	31	42	16	14	16	60	16
6	23	13	297	25	145	38	203	16	17	197	17	15
7	133	13	308	20	75	22	79	15	16	226	14	12
8	50	12	268	23	80	18	289	15	23	246	14	12
9	31	12	78	36	58	24	125	15	23	119	13	13
10	35	12	55	23	51	19	157	15	19	63	13	12
11	19	13	32	19	24	16	424	18	15	41	13	12
12	16	26	33	17	32	16	247	19	14	39	54	12
13	59	26	27	15	21	89	231	23	13	30	48	12
14	31	34	25	14	19	37	83	18	13	33	20	12
15	20	31	23	15	18	31	61	17	12	53	15	12
16	40	99	22	14	18	27	40	145	13	69	120	13
17	35	50	19	13	17	28	30	306	13	105	46	12
18	18	41	18	13	16	89	46	174	16	38	16	21
19	19	101	18	13	16	28	34	121	17	30	14	31
20	15	68	16	12	614	19	26	29	32	208	13	57
21	14	56	15	12	348	18	33	23	40	74	13	19
22	14	44	15	796	346	17	24	20	45	57	13	15
23	14	39	18	346	130	16	22	18	24	25	12	13
24	14	19	15	570	34	15	20	17	141	19	13	14
25	13	17	61	320	26	15	19	16	137	19	65	15
26	13	15	21	463	22	50	18	28	24	18	20	23
27	14	318	15	155	24	402	21	16	17	20	14	15
28	14	48	15	124	32	332	18	15	15	30	28	14
29	14	93	14	66	---	201	17	15	15	71	18	13
30	13	36	18	53	---	73	17	15	19	33	16	12
31	13	---	150	165	---	128	---	15	---	19	59	---
TOTAL	894	1365	3800	3459	3288	1879	2511	1224	807	2093	828	497
MEAN	28.8	45.5	123	112	117	60.6	83.7	39.5	26.9	67.5	26.7	16.6
MAX	140	318	761	796	614	402	424	306	141	246	120	57
MIN	12	12	14	12	16	15	17	15	12	16	12	12
AC-FT	1770	2710	7540	6860	6520	3730	4980	2430	1600	4150	1640	986

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1943 - 1999, BY WATER YEAR (WY)

MEAN	59.8	126	141	130	115	129	95.9	56.4	38.7	52.9	51.3	36.8
MAX	311	491	577	441	774	609	419	283	106	222	328	204
(WY)	1995	1991	1993	1989	1956	1982	1963	1965	1996	1989	1950	1994
MIN	11.7	15.2	18.0	9.49	12.0	10.6	11.6	15.1	9.56	10.0	14.2	9.54
(WY)	1960	1951	1977	1945	1978	1959	1992	1996	1951	1984	1944	1962

HAWAII, ISLAND OF KAUAI
16036000 MAKAWELI RIVER NEAR WAIMEA--Continued

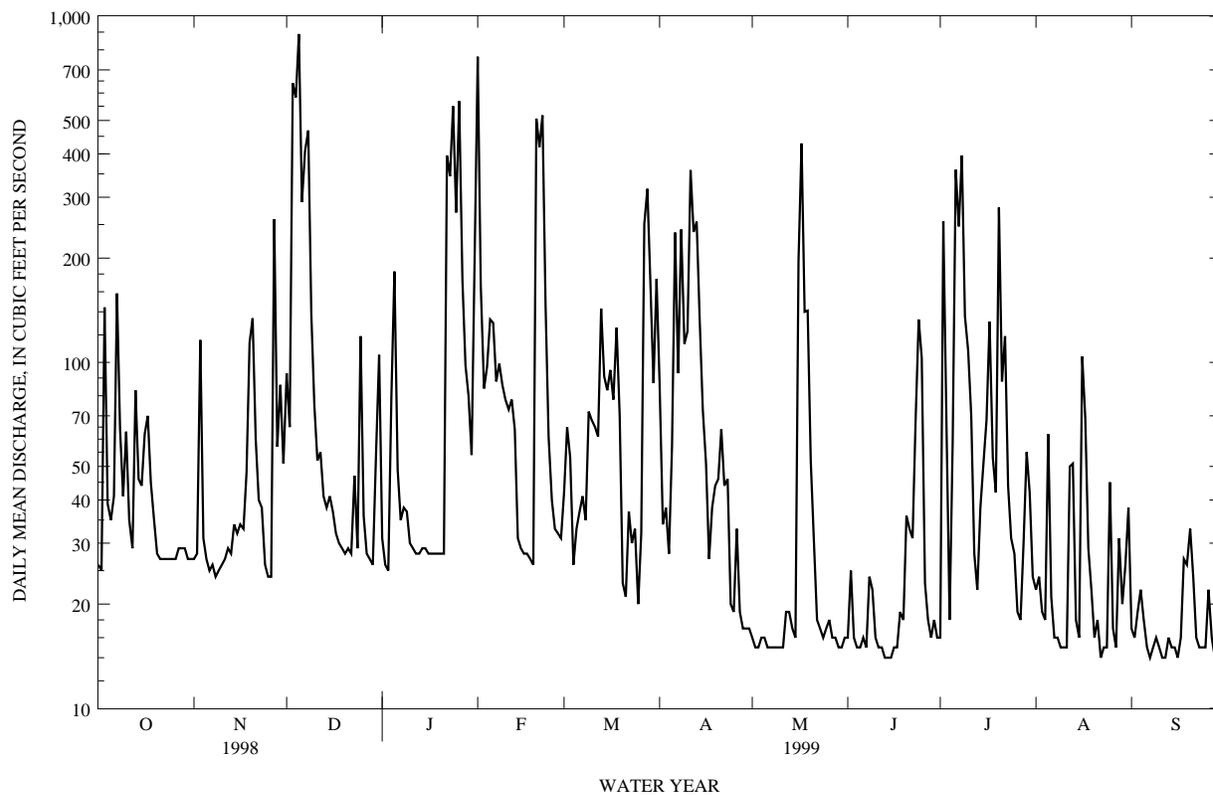
SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR		FOR 1999 WATER YEAR		WATER YEARS 1943 - 1999	
ANNUAL TOTAL	14998.1		22645		85.9	
ANNUAL MEAN	41.1		62.0		31.1	
HIGHEST ANNUAL MEAN					204	1982
LOWEST ANNUAL MEAN					31.1	1984
HIGHEST DAILY MEAN	761	Dec 4	796	Jan 22	5170	Dec 1 1957
LOWEST DAILY MEAN	9.8	Mar 15	12	Oct 1	4.3	Jul 19 1951
ANNUAL SEVEN-DAY MINIMUM	9.9	Mar 15	12	Sep 7	5.7	Oct 21 1944
ANNUAL RUNOFF (AC-FT)	29750		44920		62240	
10 PERCENT EXCEEDS	80		147		170	
50 PERCENT EXCEEDS	17		20		27	
90 PERCENT EXCEEDS	12		13		12	



HAWAII, ISLAND OF KAUAI

16049000 HANAPEPE RIVER BELOW MANUAHI STREAM, NEAR ELEELE--Continued

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR		FOR 1999 WATER YEAR		WATER YEARS 1917 - 1999	
ANNUAL TOTAL	20577		26615		84.0	
ANNUAL MEAN	56.4		72.9		30.6	
HIGHEST ANNUAL MEAN					182	1918
LOWEST ANNUAL MEAN					30.6	1953
HIGHEST DAILY MEAN	889	Dec 5	889	Dec 5	10900	Dec 3 1919
LOWEST DAILY MEAN	18	Aug 26	14	Jun 13	5.3	May 21 1954
ANNUAL SEVEN-DAY MINIMUM	19	Feb 26	15	Jun 11	6.4	May 10 1954
ANNUAL RUNOFF (AC-FT)	40810		52790		60870	
10 PERCENT EXCEEDS	101		162		172	
50 PERCENT EXCEEDS	28		31		30	
90 PERCENT EXCEEDS	21		15		15	



HAWAII, ISLAND OF KAUAI
16060000 SOUTH FORK WAILUA RIVER NEAR LIHUE

LOCATION.--Lat 22°02'24 " , long 159°22'58 " , Hydrologic Unit 20070000, on right bank 0.2 mi upstream from Wailua Falls and 4.3 mi north of Lihue.

DRAINAGE AREA.--22.4 mi².

PERIOD OF RECORD.--December 1911 to April 1919, June 1919 to March 1921, May 1921 to June 1957, August, September 1957, November 1957 to February 1958, June 1958 to current year. Monthly discharge only for some periods, published in WSP 1319. Published as "above Waiehu Falls, near Lihue" 1912-13.

REVISED RECORDS.--WSP 1249: 1941-47(M), 1948-51(P). WSP 1719: 1943-49. WSP 1937: 1958-60.

GAGE.--Water-stage recorder. Elevation of gage is 240 ft (from topographic map). Prior to November 18, 1918, at site 0.3 mi upstream at different datum. November 18, 1918 to June 30, 1957, at site 10 ft downstream from present site at datum 2.50 ft higher and July 1, 1957 to June 23, 1958, at present datum.

REMARKS.--Records computed by Roy Taogoshi. Records good. Lihue and Hanamaulu ditches divert water upstream of station for irrigation of sugarcane in vicinity of Lihue.

AVERAGE DISCHARGE.--82 years (water years 1913-18, 1920, 1922-24, 1926-56, 1959-99), 116 ft³/s (84,240 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 87,300 ft³/s, April 15, 1963, gage height, 22.90 ft, from rating curve extended above 13,000 ft³/s on basis of slope-area measurement of peak flow; minimum, 1.5 ft³/s, August 21, 1984.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 5,800 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 7	2145	*3,180	*12.56				

Minimum discharge, 5.1 ft³/s, September 15.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

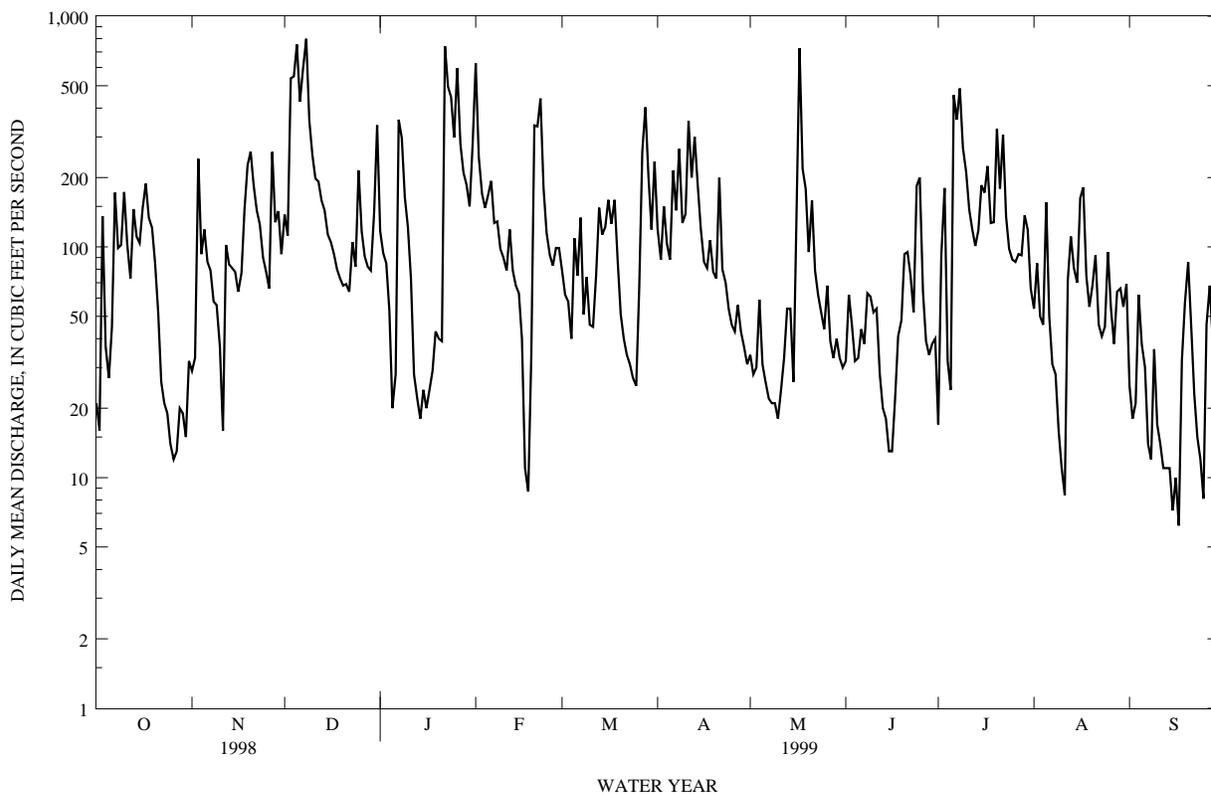
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21	29	138	117	626	79	120	34	32	17	54	25
2	16	33	112	94	246	62	88	28	62	92	85	18
3	136	241	538	85	170	58	150	30	46	180	50	21
4	37	93	549	53	148	40	103	59	32	32	46	62
5	27	119	754	20	168	109	88	31	33	24	156	38
6	45	86	427	28	193	75	215	26	44	455	50	30
7	172	79	590	356	127	134	144	22	38	356	31	14
8	99	58	799	297	129	51	266	21	63	487	28	12
9	102	56	353	164	98	74	127	21	61	269	16	36
10	173	37	251	122	90	46	139	18	52	211	11	17
11	103	16	198	73	79	45	351	24	54	145	8.4	14
12	73	102	192	28	119	75	200	33	28	119	72	11
13	146	84	159	22	79	148	300	54	20	101	111	11
14	111	81	144	18	68	113	186	54	18	118	81	11
15	104	78	113	24	63	122	120	26	13	185	70	7.2
16	148	64	105	20	40	160	86	137	13	172	163	10
17	188	77	93	24	11	126	81	726	22	224	181	6.2
18	134	146	80	29	8.7	160	107	218	41	127	75	32
19	121	226	73	43	34	87	78	179	48	128	55	57
20	85	259	68	40	336	51	73	95	93	325	68	86
21	52	184	69	39	333	40	200	159	95	179	92	45
22	26	144	64	742	440	34	80	79	75	307	46	23
23	21	125	105	495	180	31	70	62	52	135	41	15
24	19	90	82	447	115	27	54	52	184	98	45	12
25	14	78	215	298	92	25	46	44	200	88	95	8.1
26	12	66	117	596	83	67	43	68	64	86	54	46
27	13	258	91	279	99	260	56	39	39	93	38	68
28	20	128	82	210	99	403	43	33	34	92	64	38
29	19	143	79	186	---	203	37	40	38	137	66	15
30	15	93	140	150	---	119	31	33	40	119	55	8.7
31	32	---	337	280	---	234	---	30	---	66	69	---
TOTAL	2284	3273	7117	5379	4273.7	3258	3682	2475	1634	5167	2076.4	797.2
MEAN	73.7	109	230	174	153	105	123	79.8	54.5	167	67.0	26.6
MAX	188	259	799	742	626	403	351	726	200	487	181	86
MIN	12	16	64	18	8.7	25	31	18	13	17	8.4	6.2
AC-FT	4530	6490	14120	10670	8480	6460	7300	4910	3240	10250	4120	1580

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1912 - 1999, BY WATER YEAR (WY)

MEAN	92.8	174	172	174	126	148	133	98.3	56.8	76.6	83.6	75.8
MAX	339	866	696	1485	716	830	673	467	271	281	321	650
(WY)	1983	1991	1917	1921	1932	1982	1963	1927	1914	1989	1948	1914
MIN	2.58	3.13	6.61	4.66	3.15	3.46	3.84	3.29	2.82	3.27	4.76	2.59
(WY)	1954	1934	1977	1986	1947	1934	1931	1926	1957	1953	1973	1953

HAWAII, ISLAND OF KAUAI
16060000 SOUTH FORK WAILUA RIVER NEAR LIHUE--Continued

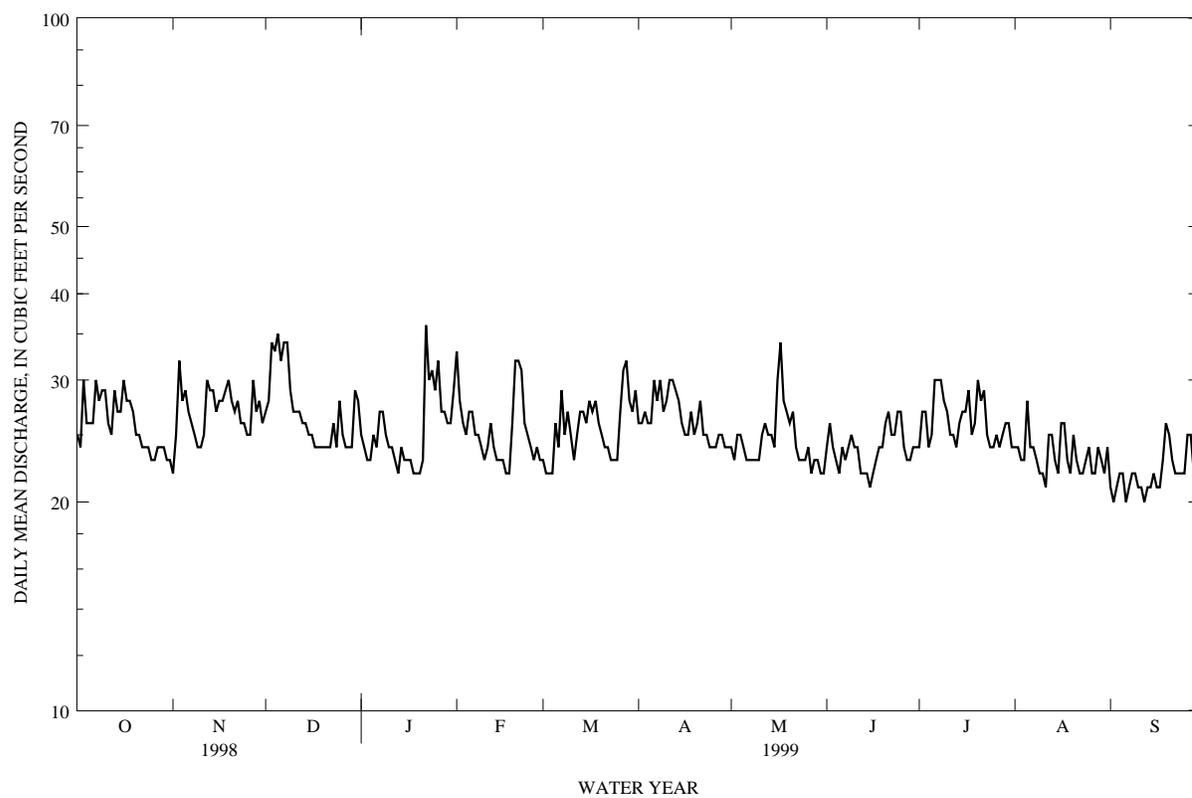
SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR		FOR 1999 WATER YEAR		WATER YEARS 1912 - 1999	
ANNUAL TOTAL	29857.5		41416.3			
ANNUAL MEAN	81.8		113		116	
HIGHEST ANNUAL MEAN					284	
LOWEST ANNUAL MEAN					17.3	
HIGHEST DAILY MEAN	799	Dec 8	799	Dec 8	13800	Jan 16 1921
LOWEST DAILY MEAN	2.9	Mar 23	6.2	Sep 17	1.8	Sep 17 1953
ANNUAL SEVEN-DAY MINIMUM	3.8	Mar 19	10	Sep 11	1.8	Sep 16 1953
ANNUAL RUNOFF (AC-FT)	59220		82150		84240	
10 PERCENT EXCEEDS	183		248		264	
50 PERCENT EXCEEDS	54		78		39	
90 PERCENT EXCEEDS	6.6		20		4.8	



HAWAII, ISLAND OF KAUAI

16061200 NORTH WAILUA DITCH BELOW WAIKOKO STREAM, NEAR LIHUE--Continued

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR		FOR 1999 WATER YEAR		WATER YEARS 1965 - 1999	
ANNUAL TOTAL	7787.5		9242		21.9	
ANNUAL MEAN	21.3		25.3		30.3	
HIGHEST ANNUAL MEAN					6.64 1969	
LOWEST ANNUAL MEAN					.00 Jan 1 1965	
HIGHEST DAILY MEAN	35	Dec 5	36	Jan 22	58	Oct 11 1966
LOWEST DAILY MEAN	6.0	Sep 18	20	Sep 2	.00	Jan 1 1965
ANNUAL SEVEN-DAY MINIMUM	9.1	Sep 15	21	Sep 1	.00	Jan 1 1965
ANNUAL RUNOFF (AC-FT)	15450		18330		15900	
10 PERCENT EXCEEDS	28		29		29	
50 PERCENT EXCEEDS	20		25		22	
90 PERCENT EXCEEDS	17		22		16	



HAWAII, ISLAND OF KAUAI
16062000 STABLE STORM DITCH NEAR LIHUE

LOCATION.--Lat 22°04'09 " , long 159°26'46 " , Hydrologic Unit 20070000, on left bank 100 ft downstream from intake, 7.8 mi northwest of Lihue, and 7.9 mi west of Kapaa.

PERIOD OF RECORD.--December 1936 to current year.

GAGE.--Water-stage recorder and sharp-crested weir. Elevation of gage is 710 ft above mean sea level, by barometer.

REMARKS.--Records computed by Roy Taogoshi. Records fair. Ditch diverts water from North Fork Wailua River for irrigation of sugarcane in vicinity of Lihue.

AVERAGE DISCHARGE.--62 years (water years 1938-99), 9.33 ft³/s (6,760 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 71 ft³/s, April 3, 1948; no flow on many days.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 8.0 ft³/s, December 5, no flow on many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	3.1	1.6	2.6	.65	2.7	1.4	1.8	1.9	2.0	1.3
2	.00	.01	3.4	1.3	1.9	.57	2.3	1.2	2.8	4.6	1.8	1.2
3	.00	.06	7.9	1.3	1.6	.51	4.0	1.4	1.6	4.1	1.9	1.3
4	.00	.05	6.7	1.1	1.5	.51	2.5	1.4	1.4	2.0	1.4	1.4
5	.00	.07	8.0	1.4	1.7	1.4	2.5	1.2	1.2	2.2	4.8	1.4
6	.00	.06	5.2	1.1	1.6	.88	4.5	1.2	1.8	5.1	1.6	1.1
7	.00	.06	7.3	3.4	1.4	1.5	3.6	1.1	1.2	5.5	1.5	.99
8	.00	.05	7.8	2.4	1.4	.98	4.7	1.1	2.0	5.7	1.3	.94
9	.00	.03	4.3	1.5	1.1	1.2	2.9	1.1	2.2	4.2	1.1	.93
10	.00	.01	3.5	1.2	1.1	.81	3.4	.92	1.8	3.3	1.1	.77
11	.00	.01	3.0	.98	1.0	.71	5.4	1.4	1.8	2.4	1.0	.77
12	.00	.05	2.7	.92	1.5	.56	4.6	1.6	1.2	2.1	2.4	.61
13	.00	.02	2.4	.88	.93	.76	4.3	1.4	1.2	1.8	2.2	.38
14	.00	.02	2.1	.77	.77	3.1	3.7	1.4	.92	3.0	1.1	.24
15	.00	.01	1.9	.77	.72	2.7	2.8	1.1	.12	4.2	1.1	.23
16	.00	1.7	1.8	.84	.65	4.7	2.5	3.0	e.06	4.1	4.1	.17
17	.00	4.9	1.7	.72	.63	3.1	2.3	5.6	e.02	5.3	3.2	.16
18	.00	4.8	1.5	.77	.63	4.6	3.0	3.4	e.02	2.6	1.6	.50
19	.00	6.1	1.4	.78	1.1	2.8	2.2	2.7	e.02	2.8	1.3	1.4
20	.00	4.7	1.3	.77	2.1	2.1	2.3	2.2	e.02	6.8	3.1	.94
21	.00	4.1	1.3	.80	2.7	1.9	3.4	2.7	e.02	5.1	1.9	.60
22	.00	4.3	1.2	5.2	2.3	1.7	2.1	1.8	.07	6.2	1.3	.85
23	.00	3.7	1.9	2.3	1.6	1.6	2.1	2.0	.09	3.2	1.4	.77
24	.00	3.2	1.2	2.4	1.3	1.5	1.8	1.8	.12	2.4	1.4	.77
25	.00	2.8	2.5	2.1	1.1	1.4	1.7	1.8	.12	2.1	2.0	.81
26	.00	2.6	1.3	2.6	.98	2.9	1.6	2.5	.07	2.6	1.3	1.2
27	.00	5.6	1.2	1.9	1.1	4.6	1.7	1.6	.06	2.1	1.1	1.4
28	.00	2.8	1.1	1.9	.80	4.3	1.5	1.6	.44	2.6	1.6	.92
29	.00	3.7	1.3	1.7	---	3.7	1.4	1.8	1.9	3.0	1.2	.77
30	.00	2.7	3.7	1.7	---	3.8	1.2	1.6	2.2	2.5	1.1	.75
31	.00	---	3.0	2.0	---	4.7	---	1.4	---	1.7	1.9	---
TOTAL	0.00	58.21	96.7	49.10	37.71	66.24	84.7	56.42	28.27	107.2	55.8	25.57
MEAN	.000	1.94	3.12	1.58	1.35	2.14	2.82	1.82	.94	3.46	1.80	.85
MAX	.00	6.1	8.0	5.2	2.7	4.7	5.4	5.6	2.8	6.8	4.8	1.4
MIN	.00	.00	1.1	.72	.63	.51	1.2	.92	.02	1.7	1.0	.16
AC-FT	.00	115	192	97	75	131	168	112	56	213	111	51

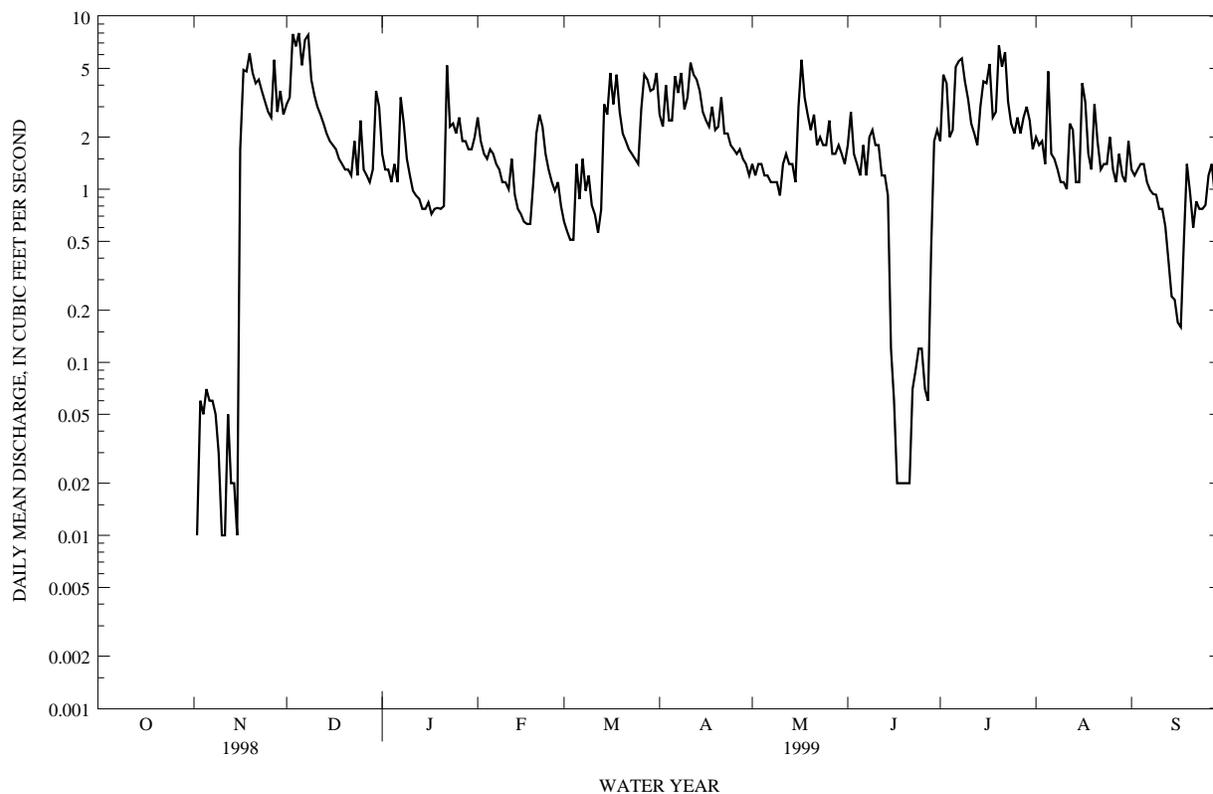
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1938 - 1999, BY WATER YEAR (WY)

MEAN	12.0	5.82	4.29	6.06	8.36	7.32	8.37	9.27	14.7	11.0	11.0	13.9
MAX	37.3	35.7	24.8	31.4	32.3	36.0	34.7	34.4	38.7	36.8	37.0	36.1
(WY)	1951	1951	1984	1946	1991	1947	1954	1954	1953	1953	1970	1950
MIN	.000	.000	.000	.000	.000	.000	.000	.000	.000	.014	.000	.000
(WY)	1999	1938	1991	1939	1938	1939	1939	1963	1938	1980	1964	1989

e Estimated

HAWAII, ISLAND OF KAUAI
16062000 STABLE STORM DITCH NEAR LIHUE--Continued

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1938 - 1999
ANNUAL TOTAL	571.53	665.92	
ANNUAL MEAN	1.57	1.82	9.33
HIGHEST ANNUAL MEAN			22.1 1984
LOWEST ANNUAL MEAN			.15 1994
HIGHEST DAILY MEAN	11 Apr 2	8.0 Dec 5	71 Apr 3 1948
LOWEST DAILY MEAN	.00 Jan 4	.00 Oct 1	.00 Oct 1 1937
ANNUAL SEVEN-DAY MINIMUM	.00 Jan 9	.00 Oct 1	.00 Oct 1 1937
ANNUAL RUNOFF (AC-FT)	1130	1320	6760
10 PERCENT EXCEEDS	4.3	4.1	33
50 PERCENT EXCEEDS	.70	1.4	.29
90 PERCENT EXCEEDS	.00	.02	.00



HAWAII, ISLAND OF KAUAI

16068000 EAST BRANCH OF NORTH FORK WAILUA RIVER NEAR LIHUE

LOCATION.--Lat 22°04'19 " , long 159°25'05 " , Hydrologic Unit 20070000, on right bank 1,200 ft upstream from mouth and 7.2 mi northwest of Lihue.

DRAINAGE AREA.--6.27 mi².

PERIOD OF RECORD.--July 1912 to September 1914, December 1914 to March 1915, May 1915 to March 1919, June 1919 to current year. Monthly discharge only for some periods, published in WSP 1319.

REVISED RECORDS.--WSP 770: 1932-33. WSP 1719: 1916. WSP 1937: 1918. WSP 2137: Drainage area.

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 500 ft (from topographic map). Prior to December 31, 1914, nonrecording gage at site 725 ft downstream at different datum. December 31, 1914 to May 10, 1934, water-stage recorder at site 75 ft upstream at present datum.

REMARKS.--Records computed by Clayton Yoshida. Records good. No diversion upstream.

AVERAGE DISCHARGE.--84 years (water years 1913-14, 1916-17, 1920-99), 48.3 ft³/s (34,990 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 18,400 ft³/s, November 12, 1955, gage height, 14.7 ft, from floodmarks, from rating curve extended above 2,700 ft³/s; minimum, 6.8 ft³/s, July 3, 13, 1926.

EXTREMES FOR CURRENT YEAR.--Peak discharge greater than base discharge of 1,900 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 7	2100	*1,830	*5.22				

Minimum discharge, 15 ft³/s, May 10, June 15.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	25	20	39	25	82	24	37	22	26	23	30	22
2	23	20	41	22	51	23	33	21	21	96	27	21
3	65	46	127	21	43	22	83	20	19	94	25	23
4	28	24	122	20	48	21	41	20	18	32	24	26
5	25	89	139	20	47	160	42	19	17	46	33	21
6	25	25	90	20	49	41	75	18	23	76	25	20
7	42	22	144	161	37	41	45	18	19	94	25	18
8	33	19	176	80	37	29	43	18	26	125	23	20
9	33	18	96	43	32	38	36	17	33	63	22	22
10	60	17	73	32	30	28	44	17	26	44	21	20
11	34	46	62	28	30	26	96	18	22	37	21	19
12	29	90	59	26	45	25	67	22	18	35	43	18
13	38	73	49	24	28	35	74	22	17	31	34	21
14	30	77	47	23	26	30	44	19	17	37	25	19
15	30	56	40	23	25	27	37	17	16	46	23	19
16	60	88	37	25	24	42	34	49	16	60	48	18
17	53	61	34	22	23	39	34	159	22	69	45	19
18	48	67	31	21	22	64	41	54	29	41	27	23
19	38	86	29	20	22	35	31	34	25	45	24	47
20	32	66	28	19	42	28	29	28	38	118	25	35
21	29	57	28	20	87	26	54	36	33	74	23	23
22	27	61	26	433	65	25	30	25	29	94	21	21
23	26	56	29	149	35	23	29	23	31	53	22	19
24	25	41	26	103	28	22	26	21	55	42	22	19
25	23	38	34	83	26	22	25	22	50	38	29	18
26	23	35	26	150	25	28	24	28	27	38	22	25
27	23	75	26	71	26	106	24	20	24	37	20	31
28	23	41	24	66	26	132	23	19	22	40	32	22
29	23	43	25	70	---	57	22	20	21	38	25	19
30	22	35	31	53	---	41	21	19	22	34	22	18
31	21	---	50	65	---	46	---	19	---	29	28	---
TOTAL	1016	1492	1788	1938	1061	1306	1244	864	762	1729	836	666
MEAN	32.8	49.7	57.7	62.5	37.9	42.1	41.5	27.9	25.4	55.8	27.0	22.2
MAX	65	90	176	433	87	160	96	159	55	125	48	47
MIN	21	17	24	19	22	21	21	17	16	23	20	18
AC-FT	2020	2960	3550	3840	2100	2590	2470	1710	1510	3430	1660	1320

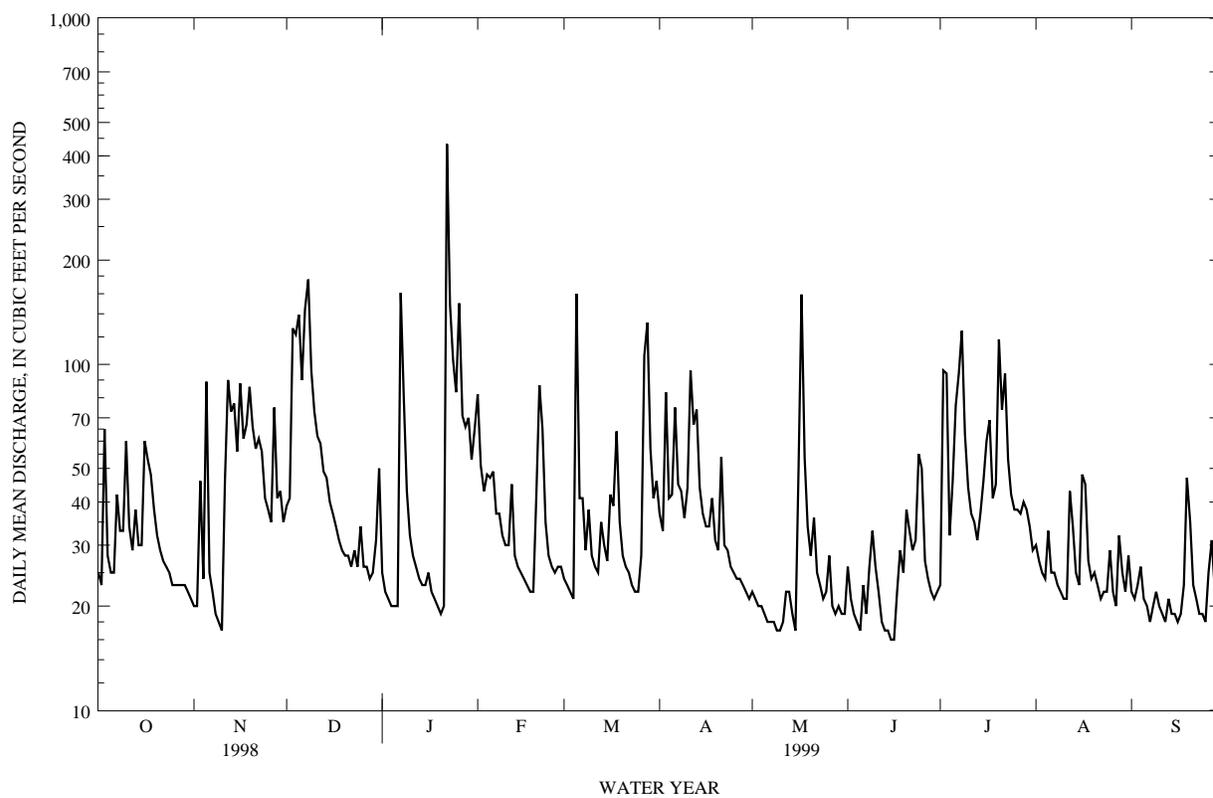
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1912 - 1999, BY WATER YEAR (WY)

MEAN	41.6	61.1	60.1	59.3	48.1	56.1	56.6	47.0	33.1	38.7	39.8	36.9
MAX	94.6	226	157	392	197	270	173	144	84.9	78.4	111	112
(WY)	1983	1991	1988	1921	1994	1982	1927	1967	1978	1980	1948	1994
MIN	12.4	16.8	12.3	11.0	8.88	11.0	10.6	9.81	13.0	12.3	11.5	11.9
(WY)	1954	1934	1964	1986	1986	1970	1926	1926	1969	1926	1984	1953

HAWAII, ISLAND OF KAUAI

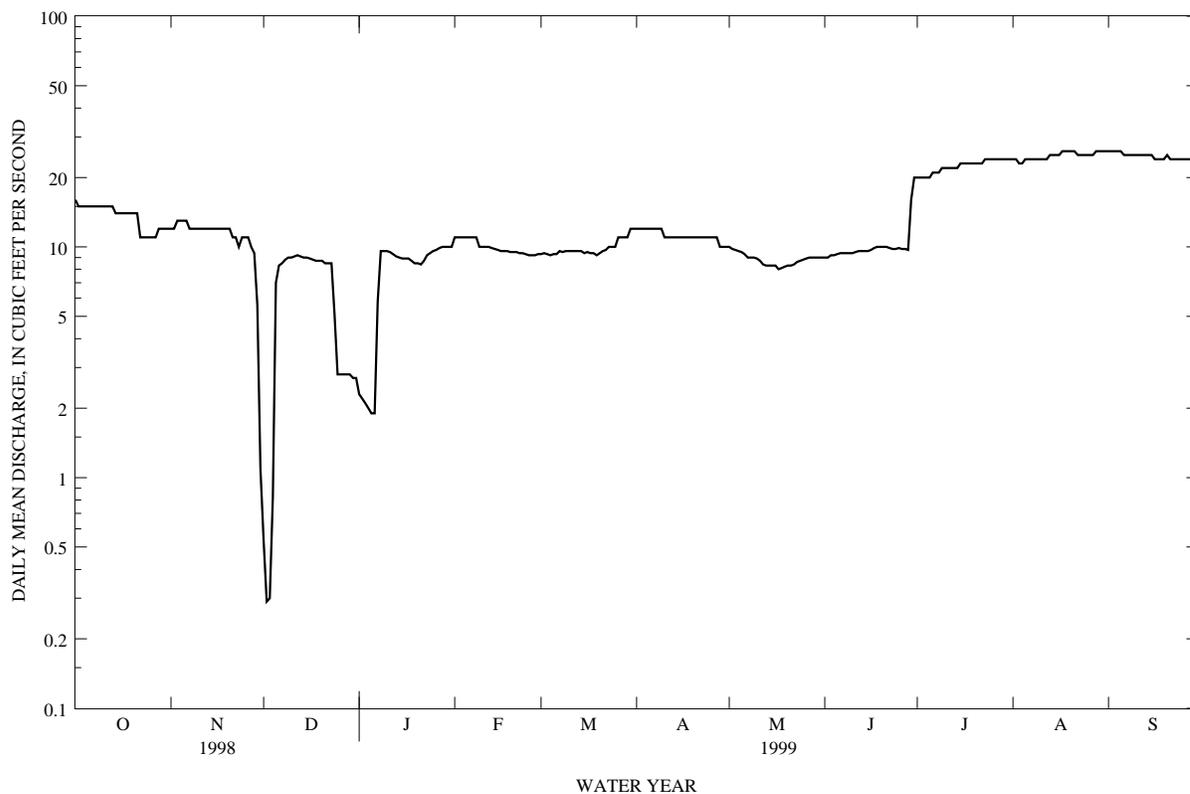
16068000 EAST BRANCH OF NORTH FORK WAILUA RIVER NEAR LIHUE--Continued

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR		FOR 1999 WATER YEAR		WATER YEARS 1912 - 1999	
ANNUAL TOTAL	12644		14702			
ANNUAL MEAN	34.6		40.3		48.3	
HIGHEST ANNUAL MEAN					95.5	1982
LOWEST ANNUAL MEAN					21.3	1984
HIGHEST DAILY MEAN	176	Dec 8	433	Jan 22	2570	Feb 13 1994
LOWEST DAILY MEAN	11	Mar 20	16	Jun 15	7.0	Jul 8 1926
ANNUAL SEVEN-DAY MINIMUM	12	Mar 19	18	May 5	8.2	Mar 5 1986
ANNUAL RUNOFF (AC-FT)	25080		29160		34990	
10 PERCENT EXCEEDS	62		74		84	
50 PERCENT EXCEEDS	27		29		31	
90 PERCENT EXCEEDS	15		19		16	



HAWAII, ISLAND OF KAUAI
16069000 WAILUA DITCH NEAR KAPAA--Continued

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1937 - 1999	
ANNUAL TOTAL	3796.31	4895.14		
ANNUAL MEAN	10.4	13.4	15.8	
HIGHEST ANNUAL MEAN			32.9	1938
LOWEST ANNUAL MEAN			5.95	1997
HIGHEST DAILY MEAN	27 Sep 4	26 Aug 17	63	Jun 4 1937
LOWEST DAILY MEAN	.06 Jul 8	.29 Dec 2	.00	May 15 1940
ANNUAL SEVEN-DAY MINIMUM	.27 Jul 3	2.2 Dec 31	.00	May 15 1940
ANNUAL RUNOFF (AC-FT)	7530	9710	11480	
10 PERCENT EXCEEDS	19	24	30	
50 PERCENT EXCEEDS	7.6	11	15	
90 PERCENT EXCEEDS	5.3	8.5	.93	



HAWAII, ISLAND OF KAUAI
16071000 NORTH FORK WAILUA RIVER NEAR KAPAA

LOCATION.--Lat 22°03'08", long 159°22'22", Hydrologic Unit 20070000, on right bank 1.1 mi upstream from confluence with South Fork, 3.7 mi southwest of Kapaa, and 5.0 mi north of Lihue.

DRAINAGE AREA.--17.9 mi².

PERIOD OF RECORD.--July 1952 to current year.

REVISED RECORDS.--WSP 2137: Drainage area. WDR HI-75-1: 1974.

GAGE.--Water-stage recorder. Elevation of gage is 18 ft above mean sea level (from topographic map).

REMARKS.--Records computed by Clayton Yoshida. Records good. Wailua ditch (station 16069000) diverts water upstream for irrigation of sugarcane in vicinities of Kapaa and Wailua.

AVERAGE DISCHARGE.--47 years (water years 1953-99), 120 ft³/s (86,740 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 53,200 ft³/s, November 12, 1955, gage height, 19.88 ft in gage well, 20.8 ft, from floodmarks, from rating curve extended above 3,700 ft³/s on basis of slope-area measurement of peak flow; minimum, 2.1 ft³/s, October 28, 1953.

EXTREMES FOR CURRENT YEAR.--Peak discharge greater than base discharge of 4,100 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 22	0515	*3,970	*7.23				

Minimum discharge, 9.4 ft³/s, September 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

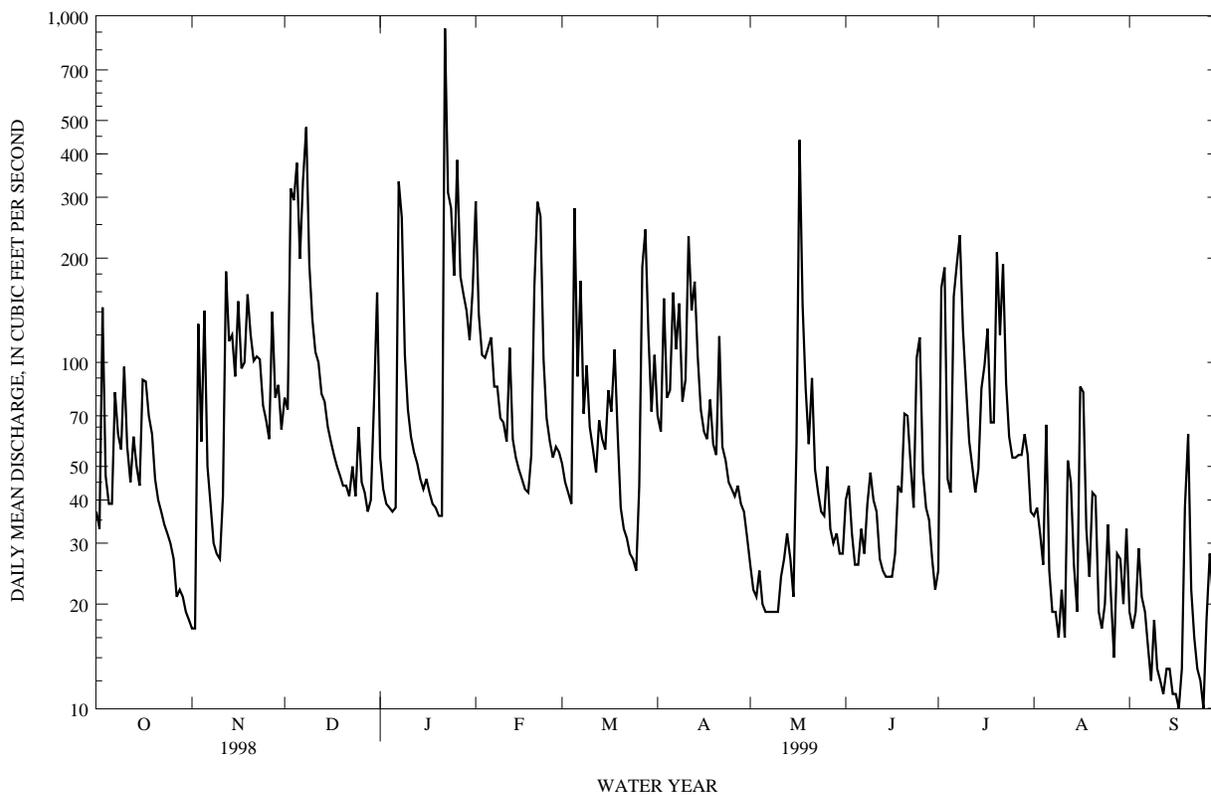
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	37	17	79	53	292	51	70	26	40	25	36	19
2	33	17	73	43	138	45	63	22	44	164	38	17
3	144	129	318	39	105	42	153	21	32	188	32	19
4	47	59	294	38	103	39	79	25	26	46	26	29
5	39	141	377	37	110	279	83	20	26	42	66	21
6	39	50	199	38	118	91	159	19	33	155	25	19
7	82	39	335	333	85	172	109	19	28	192	19	15
8	62	30	478	262	85	71	148	19	39	233	19	12
9	56	28	192	105	69	98	77	19	48	125	16	18
10	97	27	133	73	67	65	89	19	40	84	22	13
11	57	41	107	61	59	56	231	24	37	59	16	12
12	45	183	100	55	110	48	141	27	27	50	52	11
13	61	115	81	51	60	68	171	32	25	42	45	13
14	50	120	77	46	53	60	104	27	24	49	26	13
15	44	91	65	43	49	56	73	21	24	84	19	11
16	89	150	59	46	46	83	63	58	24	98	85	11
17	88	96	54	42	43	72	60	439	28	125	82	10
18	70	100	50	39	42	109	78	146	44	67	33	13
19	62	157	47	38	54	62	58	84	42	67	24	38
20	46	120	44	36	165	38	54	58	71	208	42	62
21	40	101	44	36	291	33	119	90	70	120	41	22
22	37	104	41	922	264	31	57	49	51	192	19	16
23	34	102	50	309	102	28	52	42	38	87	17	13
24	32	75	41	279	69	27	45	37	103	61	20	12
25	30	68	65	178	59	25	43	36	118	53	34	10
26	27	60	45	384	53	44	41	50	48	53	21	18
27	21	140	42	177	57	189	44	33	38	54	14	28
28	22	79	37	157	55	242	39	30	35	54	28	21
29	21	86	40	141	---	120	37	32	27	62	27	13
30	19	64	78	116	---	72	31	28	22	54	20	10
31	18	---	159	162	---	105	---	28	---	37	33	---
TOTAL	1549	2589	3804	4339	2803	2521	2571	1580	1252	2930	997	539
MEAN	50.0	86.3	123	140	100	81.3	85.7	51.0	41.7	94.5	32.2	18.0
MAX	144	183	478	922	292	279	231	439	118	233	85	62
MIN	18	17	37	36	42	25	31	19	22	25	14	10
AC-FT	3070	5140	7550	8610	5560	5000	5100	3130	2480	5810	1980	1070

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1952 - 1999, BY WATER YEAR (WY)

MEAN	98.7	186	166	147	129	142	149	116	63.0	89.4	85.2	63.1
MAX	255	591	459	529	522	730	474	418	247	230	223	273
(WY)	1983	1991	1993	1956	1979	1982	1971	1967	1980	1980	1958	1994
MIN	2.54	19.1	7.74	6.90	4.43	4.76	15.0	11.8	5.78	5.22	5.80	3.17
(WY)	1954	1977	1984	1986	1978	1978	1966	1992	1957	1953	1984	1953

HAWAII, ISLAND OF KAUAI
16071000 NORTH FORK WAILUA RIVER NEAR KAPAA--Continued

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR		FOR 1999 WATER YEAR		WATER YEARS 1952 - 1999	
ANNUAL TOTAL	22681.5		27474		120	
ANNUAL MEAN	62.1		75.3		25.7	
HIGHEST ANNUAL MEAN					262	1982
LOWEST ANNUAL MEAN					25.7	1984
HIGHEST DAILY MEAN	478	Dec 8	922	Jan 22	7350	Jan 25 1956
LOWEST DAILY MEAN	9.5	Aug 20	10	Sep 17	2.2	Oct 21 1953
ANNUAL SEVEN-DAY MINIMUM	13	Mar 18	12	Sep 11	2.4	Oct 20 1953
ANNUAL RUNOFF (AC-FT)	44990		54490		86740	
10 PERCENT EXCEEDS	122		158		251	
50 PERCENT EXCEEDS	44		50		66	
90 PERCENT EXCEEDS	17		19		8.6	



HAWAII, ISLAND OF KAUAI

16071500 LEFT BRANCH OPAEKAA STREAM NEAR KAPAA

LOCATION.--Lat 22°04'44 " , long 159°23'55 " , Hydrologic Unit 20070000, on left bank 0.4 mi upstream from mouth, 0.6 mi northeast of Wailua Reservoir, and 4.9 mi west of Kapaa.

DRAINAGE AREA.--0.65 mi².

PERIOD OF RECORD.--May 1960 to current year. Prior to July 1960, published as Left Branch Opaikaa Stream near Kapaa.

REVISED RECORDS.--WSP 2137: Drainage area.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 458.4 ft above mean sea level (by stadia survey).

REMARKS.--Records computed by Roy Taogoshi. Records good. Recording rain gage located at station.

AVERAGE DISCHARGE.--39 years (water years 1961-99), 2.61 ft³/s (1,890 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,060 ft³/s, December 14, 1991, gage height, 6.60 ft, from rating curve extended above 415 ft³/s on basis of slope-area measurement at gage height 5.01 ft; minimum, 0.09 ft³/s, September 27-30, 1968.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 70 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 07	2045	*142	*2.96	Jan. 22	1000	84	2.45

Minimum discharge, 0.72 ft³/s October 1-7.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

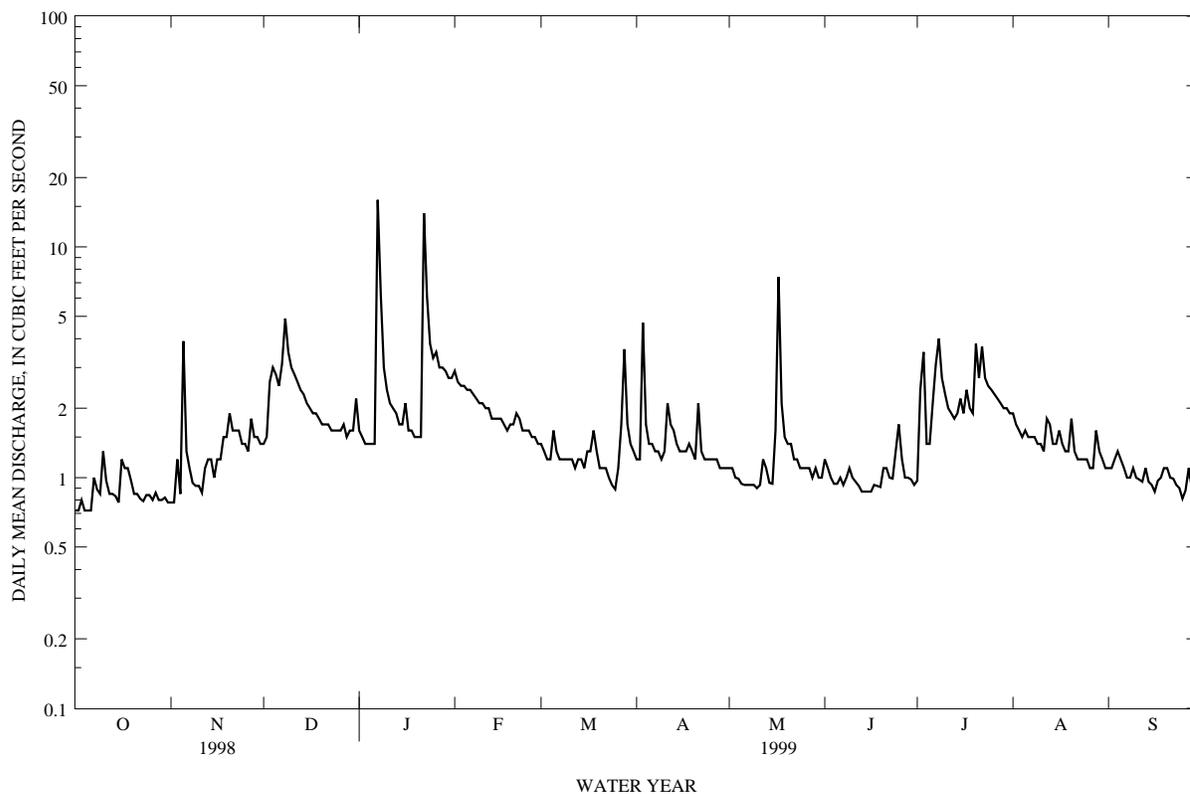
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.72	.78	1.4	1.6	2.9	1.4	1.2	1.1	1.2	.97	1.9	1.1
2	.72	.78	1.5	1.5	2.6	1.3	1.2	1.1	1.1	2.4	1.7	1.1
3	.80	1.2	2.6	1.4	2.5	1.2	4.7	1.0	1.0	3.5	1.6	1.2
4	.72	.85	3.0	1.4	2.5	1.2	1.7	.99	.94	1.4	1.5	1.3
5	.72	3.9	2.8	1.4	2.4	1.6	1.4	.94	.94	1.4	1.6	1.2
6	.72	1.3	2.5	1.4	2.4	1.3	1.4	.93	1.0	2.1	1.5	1.1
7	1.0	1.1	3.1	1.6	2.3	1.2	1.3	.93	.93	3.1	1.5	1.0
8	.89	.95	4.9	6.2	2.2	1.2	1.3	.93	1.0	4.0	1.5	1.0
9	.85	.92	3.5	3.0	2.1	1.2	1.2	.93	1.1	2.7	1.4	1.1
10	1.3	.92	3.0	2.4	2.1	1.2	1.3	.90	1.0	2.3	1.4	1.0
11	.97	.86	2.8	2.1	2.0	1.2	2.1	.93	.96	2.0	1.3	.98
12	.85	1.1	2.6	2.0	2.0	1.1	1.7	1.2	.92	1.9	1.8	.96
13	.85	1.2	2.4	1.9	1.8	1.2	1.6	1.1	.87	1.8	1.7	1.1
14	.83	1.2	2.3	1.7	1.8	1.2	1.4	.95	.87	1.9	1.4	.96
15	.78	1.0	2.1	1.7	1.8	1.1	1.3	.94	.87	2.2	1.4	.93
16	1.2	1.2	2.0	2.1	1.8	1.3	1.3	1.6	.87	1.9	1.6	.87
17	1.1	1.2	1.9	1.6	1.7	1.3	1.3	7.4	.93	2.4	1.4	.97
18	1.1	1.5	1.9	1.6	1.6	1.6	1.4	2.1	.92	2.0	1.3	1.0
19	.97	1.5	1.8	1.5	1.7	1.3	1.3	1.5	.91	1.9	1.3	1.1
20	.85	1.9	1.7	1.5	1.7	1.1	1.2	1.4	1.1	3.8	1.8	1.1
21	.85	1.6	1.7	1.5	1.9	1.1	2.1	1.4	1.1	2.7	1.3	1.0
22	.81	1.6	1.7	1.4	1.8	1.1	1.3	1.2	1.0	3.7	1.2	.99
23	.79	1.6	1.6	6.1	1.6	1.0	1.2	1.2	.99	2.7	1.2	.93
24	.84	1.4	1.6	3.8	1.6	.93	1.2	1.1	1.3	2.5	1.2	.90
25	.84	1.4	1.6	3.3	1.6	.89	1.2	1.1	1.7	2.4	1.2	.81
26	.80	1.3	1.6	3.5	1.5	1.1	1.2	1.1	1.2	2.3	1.1	.88
27	.86	1.8	1.7	3.0	1.5	1.7	1.2	1.1	1.0	2.2	1.1	1.1
28	.80	1.5	1.5	3.0	1.4	3.6	1.1	1.0	1.0	2.1	1.6	.90
29	.80	1.5	1.6	2.9	---	1.7	1.1	1.1	.98	2.0	1.3	.81
30	.82	1.4	1.6	2.7	---	1.4	1.1	1.0	.93	2.0	1.2	.81
31	.78	---	2.2	2.7	---	1.3	---	1.0	---	1.9	1.1	---
TOTAL	26.93	40.46	68.2	100.5	54.8	41.02	44.0	41.17	30.63	72.17	44.1	30.20
MEAN	.87	1.35	2.20	3.24	1.96	1.32	1.47	1.33	1.02	2.33	1.42	1.01
MAX	1.3	3.9	4.9	16	2.9	3.6	4.7	7.4	1.7	4.0	1.9	1.3
MIN	.72	.78	1.4	1.4	1.4	.89	1.1	.90	.87	.97	1.1	.81
AC-FT	53	80	135	199	109	81	87	82	61	143	87	60

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1960 - 1999, BY WATER YEAR (WY)

	1961	1966	1992	1989	1994	1982	1965	1980	1989	1982	1980	
MEAN	2.23	3.95	3.81	3.23	2.59	2.82	3.18	2.78	1.82	1.71	1.65	1.57
MAX	8.29	14.3	11.0	12.4	10.8	14.7	11.8	9.66	5.68	3.80	4.24	4.67
(WY)	1961	1966	1992	1989	1994	1982	1965	1980	1989	1982	1980	1980
MIN	.42	.59	.56	.58	.50	.50	.73	.62	.29	.59	.36	.38
(WY)	1985	1964	1963	1977	1986	1978	1998	1966	1968	1968	1984	1975

HAWAII, ISLAND OF KAUAI
16071500 LEFT BRANCH OPAEKAA STREAM NEAR KAPAA--Continued

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1960 - 1999	
ANNUAL TOTAL	428.10	594.18		
ANNUAL MEAN	1.17	1.63	2.61	
HIGHEST ANNUAL MEAN			5.72	1982
LOWEST ANNUAL MEAN			.92	1984
HIGHEST DAILY MEAN	5.4 Jan 1	16 Jan 7	218	Dec 14 1991
LOWEST DAILY MEAN	.61 Mar 24	.72 Oct 1	.09	Sep 28 1968
ANNUAL SEVEN-DAY MINIMUM	.62 May 2	.77 Oct 1	.10	Jun 6 1968
ANNUAL RUNOFF (AC-FT)	849	1180	1890	
10 PERCENT EXCEEDS	1.8	2.5	4.4	
50 PERCENT EXCEEDS	.96	1.3	1.7	
90 PERCENT EXCEEDS	.71	.89	.69	



HAWAII, ISLAND OF KAUAI
16079000 KAPAHI DITCH NEAR KEALIA

LOCATION.--Lat 22°06'09 " , long 159°22'28 " , Hydrologic Unit 20070000, on right bank 500 ft downstream from intake, and 4.0 mi west of Kealia.

PERIOD OF RECORD.--April 1909 to February 1911, May 1911, July 1911 to May 1914, July 1915 to April 1917, June 1917 to current year.
Published as "at Kapahi, near Kapaa" prior to January 1914 and as "at Kapahi, near Kealia" January to December 1913.

GAGE.--Water-stage recorder and Parshall flume. Datum of gage is 377.1 ft above mean sea level (by stadia survey). Prior to November 26, 1936, at site 61 ft upstream at datum 2.52 ft higher.

REMARKS.--Records computed by Clayton Yoshida. Records good. Ditch diverts water from Kapaa Stream for irrigation of sugarcane in vicinity of Kapaa.

AVERAGE DISCHARGE.--81 years (water years 1918-20, 1922-99), 6.22 ft³/s (4,500 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 138 ft³/s, February 6, 1913; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 17 ft³/s, May 17; minimum daily, 0.55 ft³/s, November 20.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

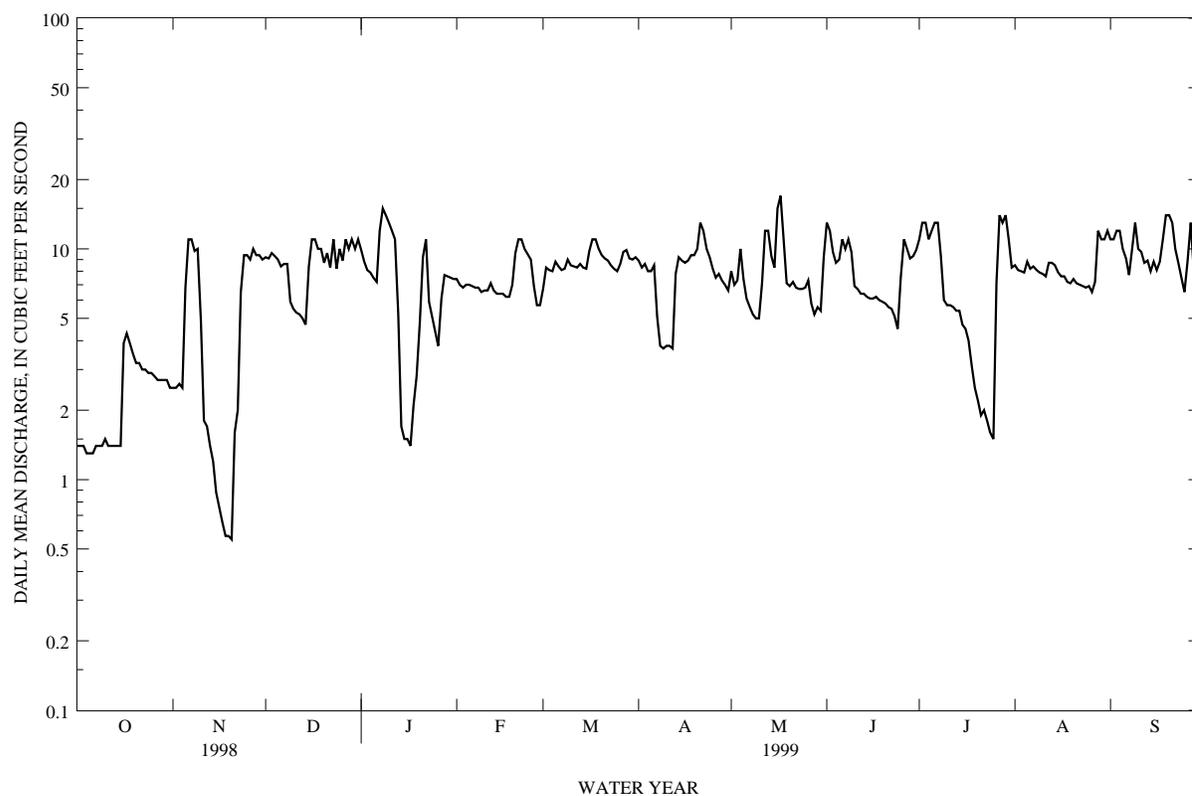
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.4	2.5	9.2	9.9	7.4	6.7	8.9	8.0	13	11	8.5	11
2	1.4	2.5	9.1	8.8	7.0	8.3	8.3	7.0	12	13	8.1	11
3	1.4	2.6	9.6	8.1	6.8	8.1	8.6	7.3	9.7	13	8.0	12
4	1.3	2.5	9.3	7.9	7.0	8.0	8.0	10	8.7	11	7.9	12
5	1.3	6.8	9.0	7.5	7.0	8.8	8.0	7.4	9.0	12	8.8	10
6	1.3	11	8.4	7.2	6.9	8.4	8.5	6.1	11	13	8.2	9.1
7	1.4	11	8.6	12	6.8	8.1	5.1	5.6	10	13	8.4	7.7
8	1.4	9.8	8.6	15	6.8	8.2	3.8	5.2	11	9.3	8.1	10
9	1.4	10	5.9	14	6.5	9.0	3.7	5.0	9.7	6.0	7.9	13
10	1.5	4.9	5.5	13	6.6	8.5	3.8	5.0	6.9	5.7	7.8	10
11	1.4	1.8	5.3	12	6.6	8.4	3.8	7.1	6.7	5.7	7.6	9.7
12	1.4	1.7	5.2	11	7.1	8.3	3.7	12	6.4	5.6	8.7	8.7
13	1.4	1.4	5.0	5.2	6.6	8.6	7.8	12	6.4	5.4	8.7	8.9
14	1.4	1.2	4.7	1.7	6.4	8.3	9.2	9.3	6.2	5.4	8.5	8.0
15	1.4	.88	8.4	1.5	6.4	8.2	8.9	8.3	6.1	4.7	7.9	8.8
16	3.9	.76	11	1.5	6.4	9.8	8.7	15	6.1	4.5	7.6	8.1
17	4.3	.65	11	1.4	6.2	11	8.9	17	6.2	4.0	7.6	8.8
18	3.9	.57	10	2.1	6.2	11	9.4	11	6.0	3.1	7.2	11
19	3.5	.57	10	2.8	7.0	10	9.4	7.1	5.9	2.5	7.1	14
20	3.2	.55	8.7	4.8	9.6	9.4	10	6.9	5.8	2.2	7.4	14
21	3.2	1.6	9.6	9.2	11	9.1	13	7.2	5.6	1.9	7.1	13
22	3.0	2.0	8.3	11	11	8.9	12	6.8	5.5	2.0	7.0	10
23	3.0	6.5	11	5.9	10	8.5	10	6.7	5.1	1.8	6.9	8.7
24	2.9	9.4	8.2	5.1	9.5	8.2	9.2	6.7	4.5	1.6	6.8	7.5
25	2.9	9.4	10	4.4	9.0	8.0	8.2	6.8	7.5	1.5	6.9	6.5
26	2.8	9.0	8.9	3.8	6.9	8.6	7.5	7.3	11	7.1	6.5	8.8
27	2.7	10	11	6.1	5.7	9.7	7.8	5.8	10	14	7.2	13
28	2.7	9.4	10	7.7	5.7	9.9	7.3	5.2	9.1	13	12	7.9
29	2.7	9.4	11	7.6	---	9.1	7.0	5.6	9.3	14	11	7.6
30	2.7	9.0	10	7.5	---	9.0	6.6	5.4	9.9	11	11	7.1
31	2.5	---	11	7.4	---	9.2	---	9.2	---	8.3	12	---
TOTAL	70.7	149.38	271.5	223.1	206.1	273.3	235.1	245.0	240.3	226.3	254.4	295.9
MEAN	2.28	4.98	8.76	7.20	7.36	8.82	7.84	7.90	8.01	7.30	8.21	9.86
MAX	4.3	11	11	15	11	11	13	17	13	14	12	14
MIN	1.3	.55	4.7	1.4	5.7	6.7	3.7	5.0	4.5	1.5	6.5	6.5
AC-FT	140	296	539	443	409	542	466	486	477	449	505	587

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1918 - 1999, BY WATER YEAR (WY)

	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
MEAN	5.96	5.12	4.66	4.48	4.91	5.67	6.52	7.70	7.58	8.13	8.42	7.00																																																																						
MAX	26.0	21.8	27.5	22.9	19.4	22.6	21.2	28.0	26.1	33.6	30.0	25.8																																																																						
(WY)	1919	1919	1922	1918	1919	1922	1918	1918	1918	1918	1918	1920																																																																						
MIN	.27	.044	.073	.012	.042	.22	.27	.32	1.57	1.66	1.88	.72																																																																						
(WY)	1961	1952	1949	1943	1956	1968	1945	1965	1962	1987	1995	1946																																																																						

HAWAII, ISLAND OF KAUAI
16079000 KAPAHI DITCH NEAR KEALIA--Continued

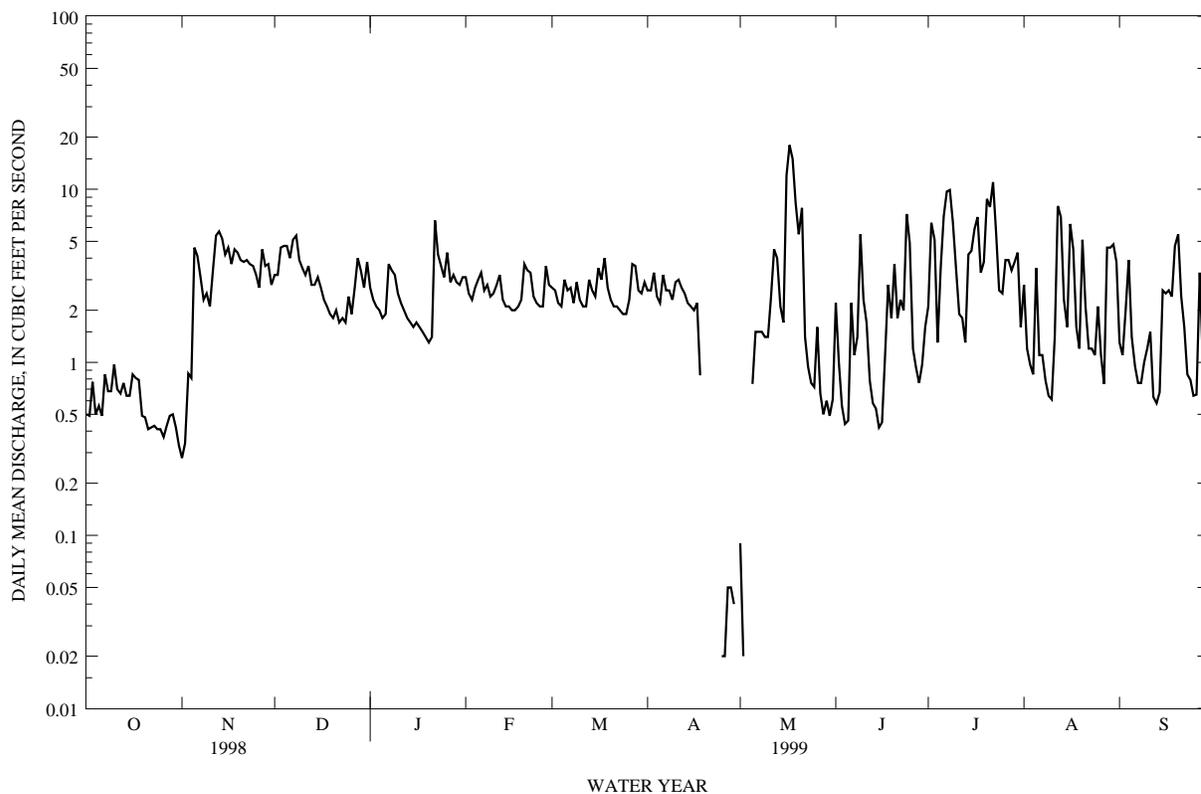
SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1918 - 1999	
ANNUAL TOTAL	2360.12	2691.08		
ANNUAL MEAN	6.47	7.37	6.22	
HIGHEST ANNUAL MEAN			21.0	1918
LOWEST ANNUAL MEAN			2.23	1965
HIGHEST DAILY MEAN	17 Apr 8	17 May 17	94	Oct 25 1926
LOWEST DAILY MEAN	.55 Nov 20	.55 Nov 20	.00	Jun 4 1922
ANNUAL SEVEN-DAY MINIMUM	.74 Nov 14	.74 Nov 14	.00	Nov 13 1925
ANNUAL RUNOFF (AC-FT)	4680	5340	4500	
10 PERCENT EXCEEDS	11	11	15	
50 PERCENT EXCEEDS	6.9	7.8	4.6	
90 PERCENT EXCEEDS	1.4	2.1	.25	



HAWAII, ISLAND OF KAUAI

16088000 ANAHOLA DITCH ABOVE KANEHA RESERVOIR, NEAR KEALIA--Continued

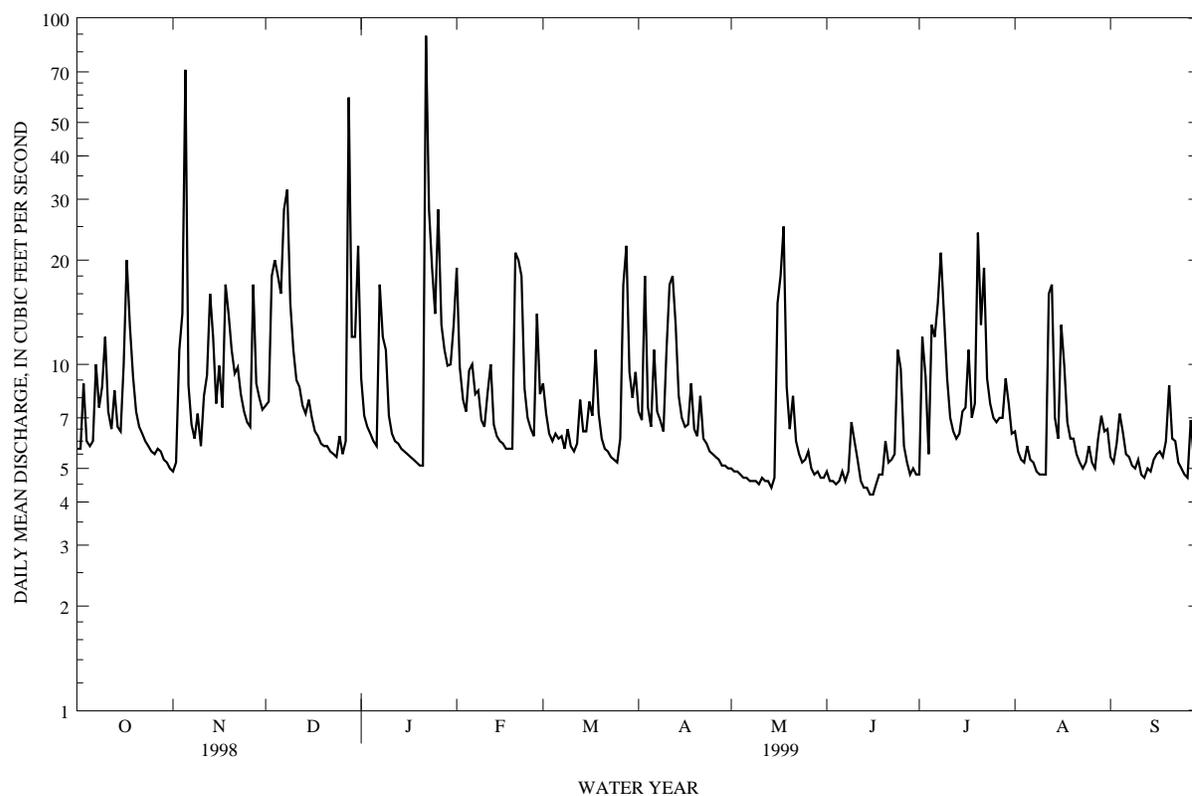
SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1922 - 1999	
ANNUAL TOTAL	723.66	925.46		
ANNUAL MEAN	1.98	2.54	4.11	
HIGHEST ANNUAL MEAN			8.00	1987
LOWEST ANNUAL MEAN			.13	1992
HIGHEST DAILY MEAN	5.9	18	62	Nov 12 1947
LOWEST DAILY MEAN	.28	.00	.00	Dec 11 1923
ANNUAL SEVEN-DAY MINIMUM	.40	.02	.00	Dec 15 1923
ANNUAL RUNOFF (AC-FT)	1440	1840	2980	
10 PERCENT EXCEEDS	3.4	4.6	10	
50 PERCENT EXCEEDS	1.7	2.2	2.8	
90 PERCENT EXCEEDS	.83	.49	.03	



HAWAII, ISLAND OF KAUAI

16097500 HALAULANI STREAM AT ALTITUDE 400 FT, NEAR KILAUEA--Continued

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1958 - 1999	
ANNUAL TOTAL	3415.2	3136.1		
ANNUAL MEAN	9.36	8.59	11.9	
HIGHEST ANNUAL MEAN			19.6	1982
LOWEST ANNUAL MEAN			7.01	1984
HIGHEST DAILY MEAN	71	89	879	Feb 13 1994
LOWEST DAILY MEAN	3.8	4.2	1.9	Sep 5 1968
ANNUAL SEVEN-DAY MINIMUM	3.8	4.4	2.4	Sep 2 1968
ANNUAL RUNOFF (AC-FT)	6770	6220	8640	
10 PERCENT EXCEEDS	16	15	21	
50 PERCENT EXCEEDS	6.9	6.4	7.5	
90 PERCENT EXCEEDS	4.7	4.8	4.6	



HAWAII, ISLAND OF KAUAI
16103000 HANAIEI RIVER NEAR HANAIEI

LOCATION.--Lat 22°11'31 " , long 159°27'57 " , Hydrologic Unit 20070000, on right bank 2.6 mi southeast of Hanalei School, and 4.9 mi upstream from mouth.

DRAINAGE AREA.--19.1 mi².

PERIOD OF RECORD.--January 1912 to November 1919, water years 1962-63 (annual maximum), December 1962 to current year.

REVISED RECORDS.--WSP 1937: Drainage area. WSP 2137: 1962(M), 1963-65(P). WDR HI-77-1: 1970-76(M), 1975-76.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 35.8 ft above mean sea level (by stadia survey). January 1, 1912 to November 20, 1919, nonrecording gage at site 0.2 mi upstream at different datum. January 26 to December 26, 1962, crest-stage gage at present site and datum.

REMARKS.--Records computed by Clayton Yoshida. Records fair except for flows greater than 300 ft³/s, which are poor. No diversion upstream. Hanalei Tunnel diverted water upstream between 1925 and 1992.

AVERAGE DISCHARGE (since diversion to Hanalei tunnel)--36 years (water years 1964-99), 214 ft³/s (155,200 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 44,600 ft³/s, November 3, 1995, gage height, 15.81 ft, from rating curve extended above 9,600 ft³/s on basis of slope-area measurements at gage height 14.66 ft and two-section slope-area estimate at gage height 15.81 ft; minimum, 31 ft³/s, September 30, October 1, 2, 5, 12, 13, November 3, 1975.

EXTREMES FOR CURRENT YEAR.--Peak discharge greater than base discharge of 9,200 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 22	0445	*16,100	*12.11	No other peak greater than base discharge.			
Minimum discharge, 71 ft ³ /s, February 9.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

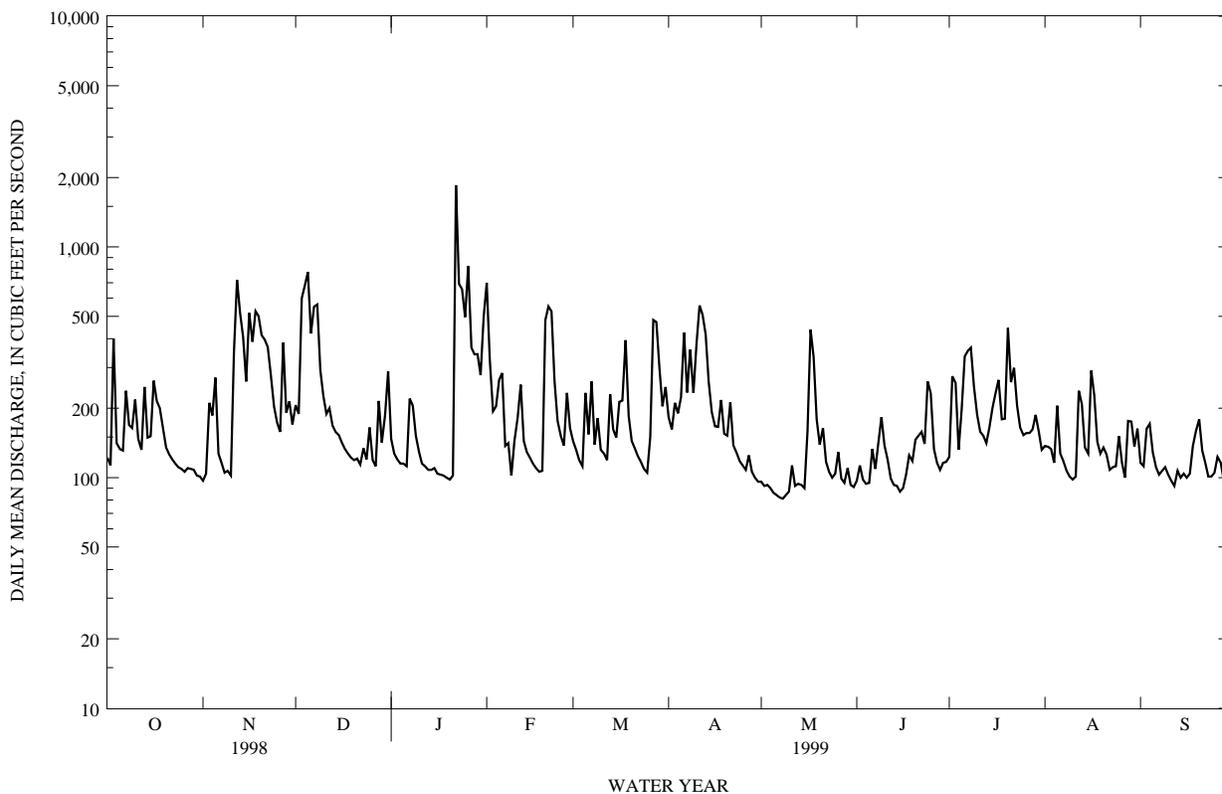
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	122	97	206	147	700	144	183	96	97	123	137	116
2	113	104	189	127	326	132	162	92	113	275	136	112
3	401	211	599	120	194	119	211	93	98	257	133	163
4	141	186	681	115	204	112	190	90	94	132	116	171
5	133	271	778	115	265	233	223	86	95	198	205	129
6	131	127	421	112	284	154	425	84	133	335	127	111
7	238	116	550	220	137	261	234	82	109	354	118	103
8	169	105	563	205	141	139	359	81	142	366	107	107
9	164	107	293	152	102	181	233	84	183	249	101	111
10	218	102	226	130	144	132	380	87	138	187	98	103
11	147	348	189	115	182	127	557	113	120	158	101	97
12	132	719	200	112	253	119	508	92	99	152	238	92
13	247	519	168	108	144	230	417	94	93	141	208	107
14	149	407	158	108	129	162	259	93	92	165	135	100
15	151	261	153	110	122	149	192	90	87	200	127	104
16	263	518	142	104	115	213	167	159	90	232	291	100
17	215	388	133	103	110	216	166	438	103	265	227	104
18	200	526	127	102	106	394	217	333	125	179	143	137
19	163	501	122	100	107	185	155	179	118	180	127	159
20	135	414	119	98	482	144	152	139	146	445	135	179
21	126	396	121	102	552	134	212	164	152	259	126	131
22	120	368	114	1850	525	124	138	117	158	299	108	116
23	115	279	134	691	261	117	128	106	140	205	111	101
24	111	203	120	655	176	109	118	100	261	165	112	101
25	109	173	165	496	151	105	113	104	232	153	151	105
26	106	158	119	825	138	150	108	129	133	156	116	123
27	110	385	112	366	233	482	125	99	116	156	100	116
28	109	191	215	342	164	472	106	95	108	162	176	97
29	108	214	142	343	---	299	100	110	116	187	175	88
30	102	170	187	278	---	204	96	93	117	159	136	86
31	101	---	289	497	---	247	---	91	---	132	163	---
TOTAL	4849	8564	7735	8948	6447	5989	6634	3813	3808	6626	4484	3469
MEAN	156	285	250	289	230	193	221	123	127	214	145	116
MAX	401	719	778	1850	700	482	557	438	261	445	291	179
MIN	101	97	112	98	102	105	96	81	87	123	98	86
AC-FT	9620	16990	15340	17750	12790	11880	13160	7560	7550	13140	8890	6880

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1962 - 1999, BY WATER YEAR (WY)

MEAN	182	309	244	220	221	268	290	216	147	187	158	143
MAX	466	793	596	614	616	1096	781	626	568	418	413	523
(WY)	1983	1991	1968	1989	1989	1982	1974	1967	1978	1989	1982	1994
MIN	44.0	72.8	59.6	49.5	42.8	56.4	76.3	73.5	57.5	62.6	42.1	35.7
(WY)	1985	1964	1984	1986	1978	1970	1966	1984	1975	1984	1973	1975

HAWAII, ISLAND OF KAUAI
16103000 HANAIEI RIVER NEAR HANAIEI--Continued

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR		FOR 1999 WATER YEAR		WATER YEARS 1962 - 1999	
ANNUAL TOTAL	69256		71366			
ANNUAL MEAN	190		196		214	
HIGHEST ANNUAL MEAN					408	1982
LOWEST ANNUAL MEAN					92.7	1984
HIGHEST DAILY MEAN	778	Dec 5	1850	Jan 22	8340	May 22 1967
LOWEST DAILY MEAN	72	Mar 20	81	May 8	31	Nov 3 1975
ANNUAL SEVEN-DAY MINIMUM	75	Mar 14	85	May 4	33	Sep 19 1975
ANNUAL RUNOFF (AC-FT)	137400		141600		155200	
10 PERCENT EXCEEDS	355		382		415	
50 PERCENT EXCEEDS	146		141		122	
90 PERCENT EXCEEDS	91		100		60	



HAWAII, ISLAND OF KAUAI
16108000 WAINIHA RIVER NEAR HANAIEI

LOCATION.--Lat 22°08'20 " , long 159°33'38 " , Hydrologic Unit 20070000, on left bank at Puwainui Falls, 1.5 mi upstream from Wainiha power plant intake, and 6.0 mi southwest of Hanalei.

DRAINAGE AREA.--10.2 mi².

PERIOD OF RECORD.--August 1952 to February 1956, October 1957 to current year.

REVISED RECORDS.--WSP 770: 1932-33. WSP 1719: 1916. WSP 1937: 1918. WSP 2137: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 960 ft above mean sea level (from topographic map).

REMARKS.--Records computed by Roy Taogoshi. Records fair. No diversion upstream.

AVERAGE DISCHARGE.--44 years (water years 1953-55, 1959-99), 138 ft³/s (100,100 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 28,100 ft³/s, April 19, 1974, gage height, 9.47 ft, from rating curve extended above 1,100 ft³/s on basis of slope-area measurement at gage height 7.72 ft; minimum, 31 ft³/s, September 29, 1965.

EXTREMES FOR CURRENT YEAR.--Peak discharge greater than base discharge of 3,600 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 22	0500	*5,590	*5.87	No other peak greater than base discharge.			
Minimum discharge, 48 ft ³ /s, January 19, 21.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

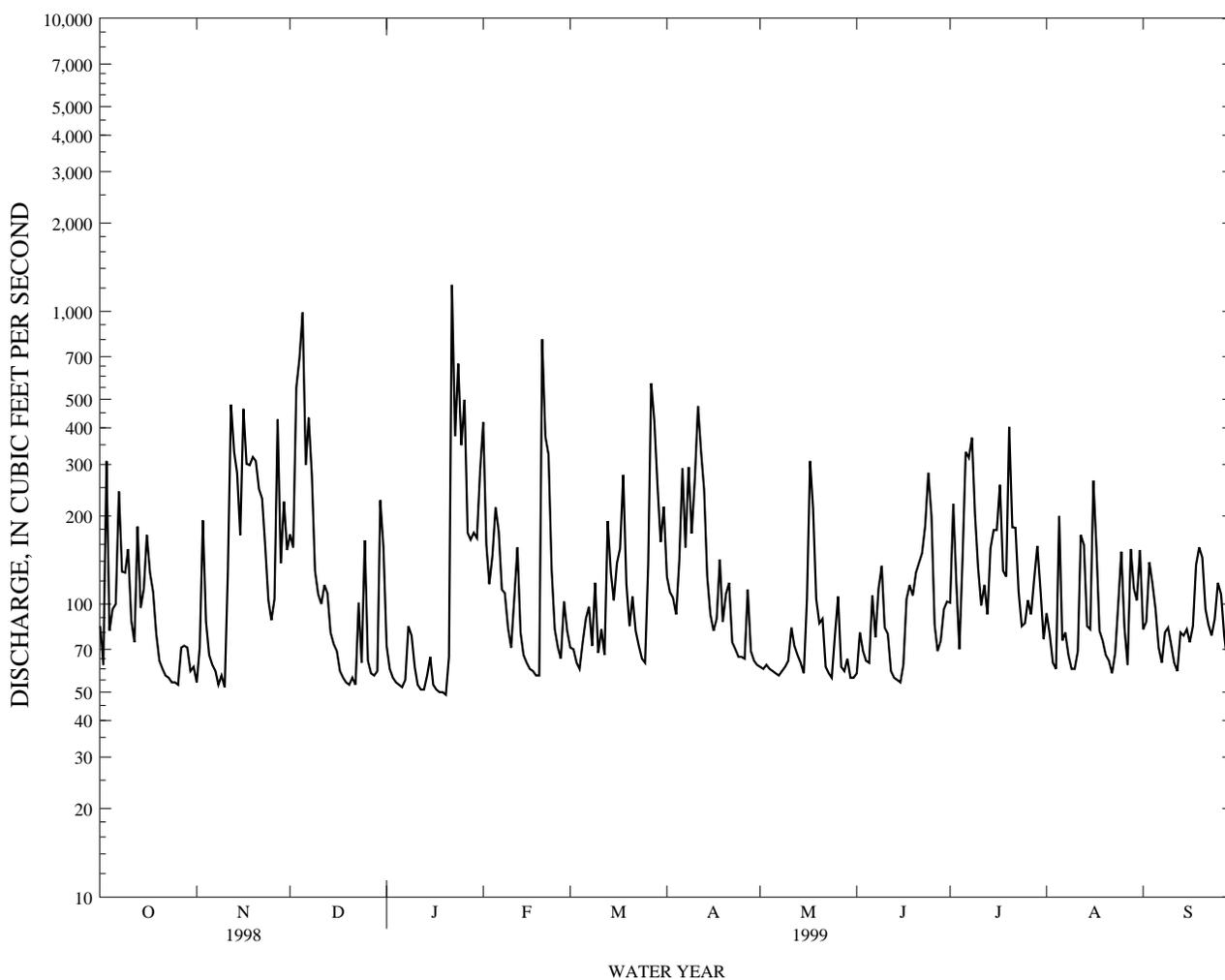
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	84	54	173	72	418	71	124	61	58	101	93	82
2	62	71	156	60	160	70	110	60	80	220	79	87
3	308	193	549	56	117	63	105	62	69	120	63	139
4	81	87	691	54	146	60	92	60	64	70	60	118
5	96	67	991	53	214	74	141	59	63	143	200	96
6	100	62	299	52	177	89	291	58	107	331	75	71
7	242	59	433	55	112	98	156	57	77	316	80	63
8	129	53	276	84	109	72	294	59	113	370	67	80
9	128	57	130	78	83	118	174	61	135	203	60	83
10	154	52	108	61	71	68	269	64	83	133	60	73
11	88	129	100	53	105	82	474	83	79	99	69	63
12	74	480	116	51	156	67	328	72	59	116	172	59
13	184	330	109	51	80	192	246	67	56	92	159	80
14	97	280	80	57	67	128	124	63	55	155	84	78
15	113	172	73	66	63	103	92	58	54	179	82	82
16	172	464	69	53	60	138	81	104	62	179	264	74
17	128	301	59	51	59	155	89	308	104	255	153	84
18	110	298	56	50	57	276	142	212	116	130	81	136
19	79	318	54	50	57	117	87	104	107	124	75	156
20	64	308	53	49	801	84	108	86	128	403	67	144
21	60	247	56	66	374	106	118	89	138	183	64	96
22	57	229	53	1230	324	81	74	61	149	182	58	85
23	56	157	101	374	131	72	70	58	185	110	68	78
24	54	103	63	662	82	65	66	56	281	84	99	89
25	54	88	165	349	71	63	66	78	200	86	151	118
26	53	104	64	499	65	137	65	106	85	103	83	108
27	71	427	58	175	102	568	112	61	69	92	62	78
28	72	138	57	166	81	422	69	59	75	122	154	64
29	71	224	59	175	---	255	64	65	96	158	113	59
30	59	153	226	168	---	163	62	56	102	112	103	57
31	61	---	156	283	---	215	---	56	---	76	153	---
TOTAL	3161	5705	5633	5303	4342	4272	4293	2503	3049	5047	3151	2680
MEAN	102	190	182	171	155	138	143	80.7	102	163	102	89.3
MAX	308	480	991	1230	801	568	474	308	281	403	264	156
MIN	53	52	53	49	57	60	62	56	54	70	58	57
AC-FT	6270	11320	11170	10520	8610	8470	8520	4960	6050	10010	6250	5320

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1952 - 1999, BY WATER YEAR (WY)

MEAN	113	187	166	144	142	169	174	123	102	132	114	95.7
MAX	228	414	384	371	492	611	504	238	187	315	272	249
(WY)	1983	1991	1968	1989	1969	1982	1971	1967	1978	1989	1982	1994
MIN	42.8	72.7	54.1	44.6	36.5	52.2	52.8	51.9	53.1	50.4	54.6	42.3
(WY)	1985	1964	1984	1986	1978	1970	1992	1966	1993	1984	1965	1965

HAWAII, ISLAND OF KAUAI
16108000 WAINIHA RIVER NEAR HANALEI--Continued

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR		FOR 1999 WATER YEAR		WATER YEARS 1952 - 1999	
ANNUAL TOTAL	46489		49139			
ANNUAL MEAN	127		135		138	
HIGHEST ANNUAL MEAN					243	
LOWEST ANNUAL MEAN					84.8	
HIGHEST DAILY MEAN	991	Dec 5	1230	Jan 22	3650	Nov 21 1974
LOWEST DAILY MEAN	44	Mar 18	49	Jan 20	31	Sep 29 1965
ANNUAL SEVEN-DAY MINIMUM	45	Mar 14	54	Jan 14	33	Sep 24 1965
ANNUAL RUNOFF (AC-FT)	92210		97470		100100	
10 PERCENT EXCEEDS	249		280		263	
50 PERCENT EXCEEDS	89		88		79	
90 PERCENT EXCEEDS	52		57		49	



HAWAII, ISLAND OF KAUAI
16114000 LIMAHLI STREAM NEAR WAINIHA

LOCATION.--Lat 22°13'15 " , long 159°34'48 " , Hydrologic Unit 20070000, on left bank 0.2 mi upstream from intersection with Kuhio Highway, and entrance to Haena State Park.

DRAINAGE AREA.--1.36 mi².

PERIOD OF RECORD.--October 1994 to current year.

GAGE.--Water-stage recorders and natural control. Elevation of gage is 160 ft above mean sea level, by altimeter.

REMARKS.--Records computed by Clayton Yoshida. Records good. Limahuli Gardens diverts water through a 4-inch pipe, upstream of station.

AVERAGE DISCHARGE.--5 years (water years 1995-99), 9.8 ft³/s (7,100 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 760 ft³/s, January 4, 1997, gage height, 4.60 ft; minimum, 3.5 ft³/s, June 30, July 1, 2, 1995.

EXTREMES FOR CURRENT YEAR.--Peak discharge greater than base discharge of 300 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Dec. 28	1330	*201	*2.74				

Minimum discharge, 5.1 ft³/s, September 29, 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.7	5.4	12	27	8.9	10	9.1	6.5	5.8	6.5	6.0	7.3
2	5.6	5.6	10	10	7.6	8.3	8.0	6.4	5.8	12	5.7	6.5
3	6.0	6.7	20	7.9	7.4	6.9	7.5	6.2	5.8	8.4	5.6	6.5
4	5.8	5.7	19	7.1	7.5	6.4	7.1	6.1	5.8	6.8	5.5	7.3
5	5.7	5.6	28	6.7	10	6.2	6.9	5.9	5.9	13	5.8	6.5
6	5.8	5.4	16	6.5	11	6.0	7.3	5.9	6.2	14	5.4	6.0
7	8.3	5.4	13	6.4	8.4	6.4	6.8	5.9	5.8	13	5.5	5.8
8	6.7	5.5	12	8.4	9.8	6.0	9.1	5.8	5.9	14	5.4	5.8
9	6.2	5.4	9.3	7.9	7.7	5.9	8.4	5.8	7.0	11	5.4	5.7
10	6.4	5.2	8.7	6.8	7.2	5.8	9.9	5.7	6.3	8.6	5.3	5.6
11	6.0	6.8	8.2	6.4	12	5.7	16	5.8	5.8	7.2	6.2	5.5
12	5.9	18	9.4	6.1	12	5.7	19	5.8	5.7	6.7	11	5.5
13	6.5	26	8.7	6.0	8.0	8.5	17	5.9	5.6	6.7	11	5.7
14	6.1	16	7.7	5.9	7.2	6.5	11	5.9	5.7	8.6	7.2	5.9
15	6.1	10	11	5.8	7.0	6.5	8.8	6.2	5.7	9.0	6.5	5.6
16	5.9	13	9.1	5.8	6.7	6.4	7.9	8.2	5.7	7.8	12	5.6
17	7.3	14	7.7	5.8	6.5	7.5	7.8	7.6	5.8	9.7	8.2	5.6
18	6.4	18	7.2	5.7	6.8	9.6	9.5	6.7	6.1	8.2	6.7	6.6
19	6.2	21	7.1	5.6	6.5	8.9	7.8	6.4	6.2	7.7	6.3	6.2
20	6.0	13	6.9	5.6	33	6.8	7.5	6.2	6.1	21	6.3	6.4
21	5.8	10	6.7	5.6	13	6.5	7.4	6.1	6.1	9.8	6.1	5.8
22	5.8	9.5	6.7	26	9.3	6.5	7.1	6.0	6.1	10	5.7	5.5
23	5.8	8.7	6.5	15	8.1	6.3	6.9	5.9	6.8	8.3	5.8	5.4
24	5.8	7.9	6.5	21	6.9	6.3	6.8	5.9	10	7.2	5.7	5.5
25	5.6	7.3	7.2	14	6.4	6.3	6.8	6.2	9.3	6.7	6.2	5.4
26	5.6	7.5	6.6	20	6.3	6.9	6.7	6.2	7.0	6.4	6.1	5.4
27	6.0	18	6.3	12	26	24	6.6	6.0	6.4	6.2	5.7	5.4
28	5.7	10	41	9.4	12	22	6.5	5.9	6.3	6.9	9.1	5.3
29	5.6	10	12	10	---	22	6.5	5.9	6.7	8.1	7.5	5.2
30	5.5	10	18	8.7	---	12	6.5	5.9	6.9	6.9	8.2	5.1
31	5.4	---	21	9.1	---	12	---	5.8	---	6.3	---	---
TOTAL	187.2	310.6	369.5	304.2	279.2	270.8	260.2	190.7	190.3	282.7	212.9	175.6
MEAN	6.04	10.4	11.9	9.81	9.97	8.74	8.67	6.15	6.34	9.12	6.87	5.85
MAX	8.3	26	41	27	33	24	19	8.2	10	21	12	7.3
MIN	5.4	5.2	6.3	5.6	6.3	5.7	6.5	5.7	5.6	6.2	5.3	5.1
AC-FT	371	616	733	603	554	537	516	378	377	561	422	348

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1995 - 1999, BY WATER YEAR (WY)

MEAN	7.81	10.2	11.3	11.4	8.69	9.05	14.7	11.8	8.44	8.87	7.73	7.70
MAX	9.62	12.5	12.6	23.8	12.0	15.7	32.6	22.4	12.2	9.28	9.84	9.32
(WY)	1996	1996	1997	1997	1996	1997	1997	1997	1996	1998	1995	1996
MIN	6.04	7.66	7.43	6.04	6.27	5.63	8.67	6.15	5.20	8.51	5.96	5.85
(WY)	1999	1995	1995	1995	1995	1995	1999	1999	1995	1996	1996	1999

HAWAII, ISLAND OF KAUAI
16114000 LIMAHLI STREAM NEAR WAINIHA--Continued

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR		FOR 1999 WATER YEAR		WATER YEARS 1995 - 1999	
ANNUAL TOTAL	3446.3		3033.9			
ANNUAL MEAN	9.44		8.31		9.81	
HIGHEST ANNUAL MEAN					13.5 1997	
LOWEST ANNUAL MEAN					7.72 1995	
HIGHEST DAILY MEAN	41	Dec 28	41	Dec 28	238	Jan 4 1997
LOWEST DAILY MEAN	5.2	Nov 10	5.1	Sep 30	3.7	Jul 1 1995
ANNUAL SEVEN-DAY MINIMUM	5.5	Nov 4	5.3	Sep 24	3.9	Jun 26 1995
ANNUAL RUNOFF (AC-FT)	6840		6020		7100	
10 PERCENT EXCEEDS	15		13		15	
50 PERCENT EXCEEDS	7.5		6.6		7.0	
90 PERCENT EXCEEDS	6.0		5.6		5.4	

